Matrox Convert DVI

Installation and User Guide (Windows version)

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Your notes

1

Introducing Matrox Convert DVI

This chapter lists the Convert DVI system requirements, and describes the available documentation.

Welcome to Matrox Convert DVI

Matrox Convert DVI products let you convert high-resolution DVI sources to HD and SD video for broadcast, display, and recording. It takes your DVI output and converts it to high-quality SDI and analog video simultaneously. Stereo audio input can be embedded into the SDI output from Matrox Convert DVI. You can choose to output your entire computer screen, or focus on details in a specific region of interest on the screen. To ensure optimal quality and flexibility, Matrox Convert DVI products provide genlock with timing offset controls, a flicker reduction filter, one-to-one pixel mapping, and an advanced scaling algorithm.

Matrox Convert DVI products are ideal for creating broadcast video from computer applications such as video games, PowerPoint presentations, and web browser sessions. They also provide a user-friendly way to create software application training videos. You can also use Matrox Convert DVI products independently from a computer in stand-alone mode to deliver SDI and analog video in applications where the DVI signal is not coming from a computer, but from a DVI camera or other device.

Note Throughout the Matrox Convert DVI documentation, the term “Convert DVI” refers to Convert DVI and Convert DVI Plus, unless indicated otherwise.

Supported video output formats

Matrox Convert DVI supports the following video output formats:

- NTSC.
- PAL.
- 1280×720p @ 50 and 59.94 fps.
- 1920×1080i @ 25 and 29.97 fps.

Hardware supplied for Matrox Convert DVI

- Matrox Convert DVI box.
- Matrox Convert DVI cable (includes USB, DVI, and audio connectors).
- Y/C (S-Video) adapter cable.
- External AC/DC adapter and power cord.

Matrox Convert DVI system requirements

For initial configuration, Matrox Convert DVI requires a computer with the following system configuration:

- Microsoft Windows 7 Professional, Ultimate, or Home Premium (32- or 64-bit) with Service Pack 1, or Windows XP Professional 32-bit with Service Pack 3.
- One free USB 2.0 port.
- A PCIe display card that supports at least one DVI-D output. If your display card does not have a DVI connector, you can use an HDMI to DVI adapter, or a DisplayPort to DVI adapter (VGA to DVI adapters are not supported).
- An optional DVI monitor that supports digital input can be used to preview the Convert DVI desktop. You should make sure that your preview monitor supports your desired DVI output resolution.
- To use Convert DVI in stand-alone mode, the only requirement is a DVI device, such as a camera or medical device, which provides a DVI-D output signal in a supported resolution. For a list of the supported DVI desktop resolutions, see "Supported Convert DVI desktop resolutions" on page 24.

Note If the preview monitor or source device that you want to use with Convert DVI does not have a DVI connector, you can use an HDMI to DVI adapter, or a DisplayPort to DVI adapter (VGA to DVI adapters are not supported).

For up-to-date information about system requirements, check the Support section of our website for your Matrox product at www.matrox.com/video/support.

About this manual

This manual provides you with information about how to install, use, and configure your Matrox Convert DVI.

Style conventions

The following style conventions are used in this manual:

- The names of files, folders, and manuals appear in *italics*. For example:
  - The data is stored in the *Sample.avi* file.
  - The file is located in your *C:\Windows\System* directory.
  - Please refer to your *Matrox Convert DVI Release Notes*.
- Menus and commands that you need to choose are displayed in the form **Menu > Command**. For example, **File > Save** means click **File** in the menu bar, then click **Save** in the menu that appears.
- The names of keys are displayed in small capital bold letters, such as the **CTRL** key.

- A plus (+) sign is used to indicate combinations of keys and/or mouse operations. For example:
  - **CTRL+C** means to hold down the **CTRL** key while pressing the **C** key.
  - **SHIFT+click** means to hold down the **SHIFT** key while you click an item with the mouse.

Last-minute information

Any important information that wasn't available for inclusion in this manual by publication time is provided to you in the *Matrox Convert DVI Release Notes*.

2

Connecting External Devices to Matrox Convert DVI

This chapter shows you how to connect external devices to Matrox Convert DVI.

Available Convert DVI connections

Matrox Convert DVI allows you to connect multiple devices for simultaneous output, and supports the following connections:

- One DVI input and one DVI output.
- One USB 2.0 port (required for configuring Convert DVI only).
- Your choice of one of the following video output combinations:
  - HD SDI output with embedded audio and simultaneous HD analog component output.
  - SD SDI output with embedded audio and simultaneous SD analog component output.
  - SD SDI output with embedded audio and simultaneous S-Video and composite output.
- Genlock reference input.
- One RCA stereo output.
- DC power jack.
- One male stereo audio input and one female stereo audio output.

The connections you make depend on the type of video you want to output, such as SDI and analog component, and how you want to use your Matrox Convert DVI. You can use Convert DVI with a computer, or in stand-alone mode as explained in "Matrox Convert DVI in stand-alone mode" on page 7.

Matrox Convert DVI functionality

Matrox Convert DVI can function in two ways. The first is with a computer to broadcast video from computer applications, such as PowerPoint presentations, web-based content, and video games. The second is in stand-alone mode with any device that has a DVI-D output, such as a camera, medical device, or a different computer from the host computer.

Using Matrox Convert DVI with a computer

You can connect Matrox Convert DVI to a computer in order to broadcast video from computer applications, such as PowerPoint presentations, web-based content, and video games. You use your computer's DVI output as the input to Convert DVI, which is converted to high-quality video and output through Convert DVI's SDI and analog outputs. To configure Convert DVI's video outputs, you must connect Convert DVI to your computer using a USB connection.

When Convert DVI is connected to the DVI output from a computer's display card (see "Connecting Convert DVI" on page 7), the Windows operating system detects the Convert DVI as a monitor (or as a secondary monitor if you connected

Convert DVI to your display card's second output). Because Convert DVI doesn't have a screen, you can connect a DVI monitor to the DVI OUT on your Convert DVI in order to preview what will be output through Convert DVI's video outputs. Whatever is displayed on the monitor connected to Convert DVI's DVI OUT (Convert DVI desktop) is output as high-quality video through the Convert DVI video outputs. If you've defined a region of interest, however, only your selected area of the Convert DVI desktop will be output.

You can connect Convert DVI to any of your display card's DVI outputs. However, if you have a display card with multiple outputs, and you connect Convert DVI to a DVI output other than your primary output (where you would normally connect your main monitor), you must make sure to enable the output by extending or duplicating (cloning) your displays. For more information, see "Configuring your display settings for use with Convert DVI" on page 21.

Matrox Convert DVI in stand-alone mode

Once you've configured Matrox Convert DVI, you can program Convert DVI for stand-alone mode using your last-applied configuration settings. When using Convert DVI in stand-alone mode, you can disconnect the USB cable from the host computer and use Convert DVI with any device that has a DVI-D output in a supported desktop resolution. For example, you can connect Convert DVI to the DVI output from a camera or medical device, or the DVI output from a different computer from the host computer that you used to configure Convert DVI.

When using Convert DVI in stand-alone mode, the DVI input to Convert DVI is converted to high-quality video and output through Convert DVI's SDI and analog outputs according to the programmed configuration settings. In order to preview the Convert DVI desktop, you can connect a DVI monitor to the DVI OUT on Convert DVI.

For detailed instructions for programming and using your Convert DVI in stand-alone mode, see "Stand-alone mode" on page 46.

Using DVI to HDMI and DVI to DisplayPort adapters

If the device that you want to connect to Convert DVI's DVI input or output does not have a DVI connector, you can use an HDMI to DVI adapter, or a DisplayPort to DVI adapter to connect your device to Convert DVI (VGA to DVI adapters are not supported).

Connecting Convert DVI

Matrox Convert DVI includes a cable to connect the Convert DVI box to a computer or any DVI device you want to use as a DVI source. The cable has four connectors on the computer end, and two connectors on the Convert DVI end.

Important Convert DVI's USB connection is needed only when installing ConvertUtils (see "Installing your Matrox software" on page 20), or configuring Convert DVI (see Chapter 4, "Configuring Matrox Convert DVI"). Although a USB connection is required for programming Convert DVI for stand-alone mode, it is not required for using Convert DVI in stand-alone mode (see "Stand-alone mode" on page 46).

Connecting Convert DVI to your computer's primary DVI output

If your display card has one DVI output, or if it has two DVI outputs, but you don't have two DVI monitors, you can connect Convert DVI to your primary DVI output (where you would normally connect your main monitor). Since your primary output is already enabled in your Windows display settings by default, you do not need to enable any other DVI outputs. When you connect Convert DVI to your primary output, you must connect your DVI monitor to Convert DVI's DVI OUT to see your main desktop. When Convert DVI is properly connected, and Windows has started, the red (Convert DVI Plus) or blue (Convert DVI) LED located at the front of the Convert DVI box lights up and is constant.

① Connect the USB B connector on the Convert DVI end of the cable to the USB B port on your Convert DVI.

② Connect the USB A connector on the computer end of the cable to the USB A port on your computer (a High-Speed USB 2.0 connection is required).

③ Connect the external power supply to the DC power jack on the Convert DVI, and to an AC outlet. If your Convert DVI comes with an external power supply cable with international adapter plugs for use in different regions, see "Convert DVI power supply and adapter plugs" on page 13.

Important You **must** install the Convert DVI software before proceeding (see "Installing your Matrox software" on page 20). Because you will be connecting Convert DVI to your primary output, you won't be able to see your desktop unless the Convert DVI software is installed. After you have successfully installed ConvertUtils, proceed to step 4.

④ Connect the DVI connector on the Convert DVI end of the cable to the DVI IN connector on the Convert DVI. Tighten the thumb screws to ensure a stable connection.

⑤ Connect the DVI connector on the computer end of the cable to the primary DVI connector on your computer. Tighten the thumb screws to ensure a stable connection.

Note If your computer has an HDMI or DisplayPort output, you can use a third-party HDMI to DVI or DisplayPort to DVI adapter.

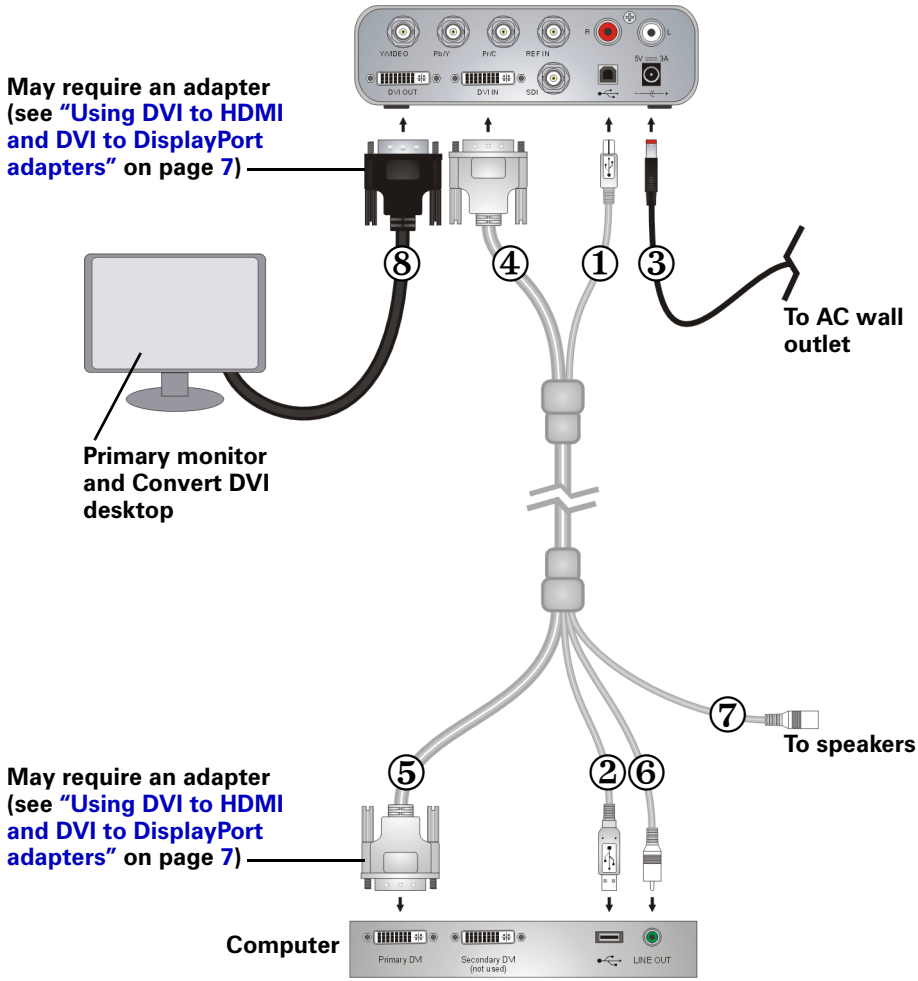
⑥ Insert the male stereo audio plug on the computer end of the Convert DVI cable into the LINE OUT jack on your sound card or laptop.

⑦ Connect the female stereo audio jack on the computer end of the Convert DVI cable to your speakers. You can also connect your speakers to Convert DVI's RCA audio outputs if you have the proper adapter.

⑧ Connect the DVI connector on your DVI monitor to the DVI OUT on Convert DVI. If your DVI monitor is black when you start Windows, see "If you have display issues when starting Windows" on page 25 for more information.

Note If your monitor has an HDMI or DisplayPort output, you can use a third-party HDMI to DVI or DisplayPort to DVI adapter.

Convert DVI connected to primary DVI output



Connecting Convert DVI to your computer's secondary DVI output

If your display card has multiple DVI outputs, you can connect Convert DVI to your secondary DVI output. By doing this, you can use two monitors in your workflow. You can use your primary monitor as a workspace to configure Convert DVI and perform any other Windows tasks, and your secondary monitor exclusively to preview what will be output through Convert DVI's analog and SDI outputs. When Convert DVI is properly connected, and Windows has started, the red (Convert DVI Plus) or blue (Convert DVI) LED located at the front of the Convert DVI box lights up and is constant.

Note When you connect Convert DVI to your secondary DVI output, you must enable that output as described in "Configuring your display settings for use with Convert DVI" on page 21.

① Connect the USB B connector on the Convert DVI end of the cable to the USB B port on your Convert DVI.

② Connect the DVI connector on the Convert DVI end of the cable to the DVI IN connector on the Convert DVI. Tighten the thumb screws to ensure a stable connection.

③ Connect the DVI connector on the computer end of the cable to the secondary DVI connector on your computer. Tighten the thumb screws to ensure a stable connection.

Note If your computer has an HDMI or DisplayPort output, you can use a third-party HDMI to DVI or DisplayPort to DVI adapter.

④ Connect the USB A connector on the computer end of the cable to the USB A port on your computer (a High-Speed USB 2.0 connection is required).

⑤ Insert the male stereo audio plug on the computer end of the Convert DVI cable into the LINE OUT jack on your sound card or laptop.

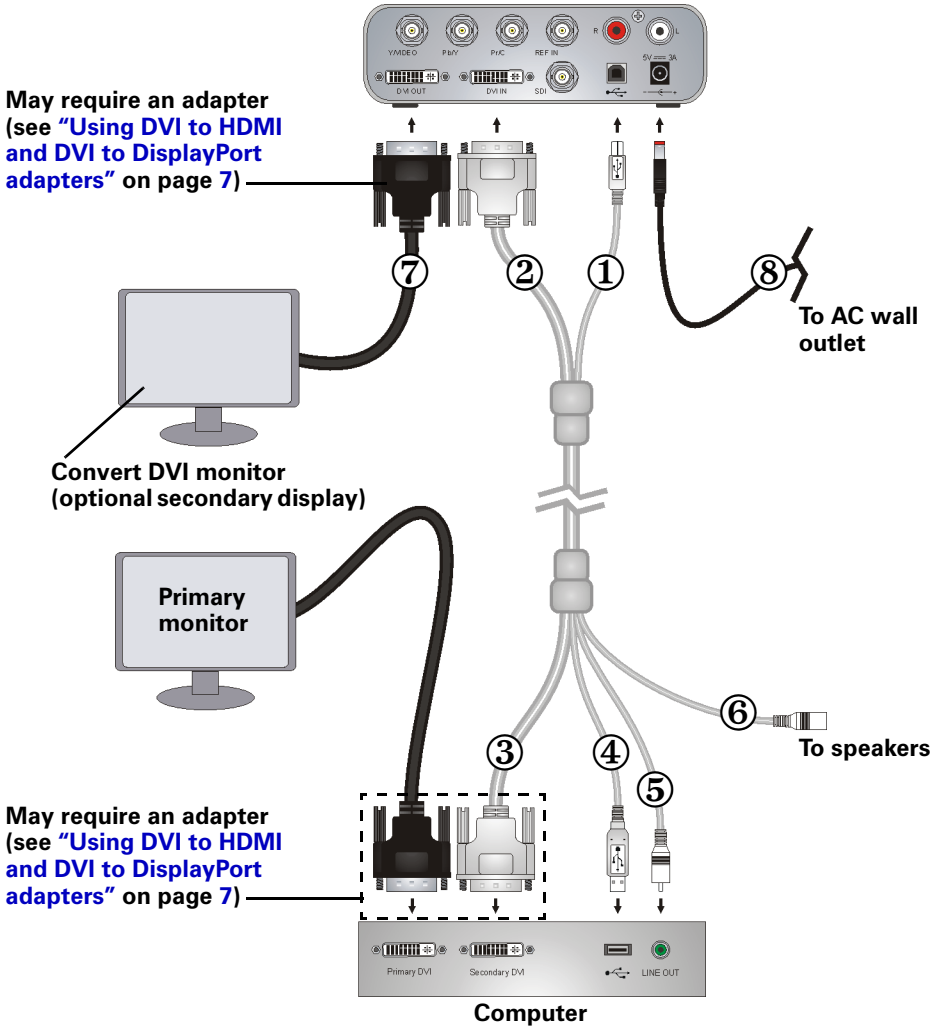
⑥ Connect the female stereo audio jack on the computer end of the Convert DVI cable to your speakers.You can also connect your speakers to Convert DVI's RCA audio outputs if you have the proper adapter.

⑦ Connect the DVI connector on your secondary DVI monitor to the DVI OUT on Convert DVI.

⑧ Connect the external power supply to the DC power jack on the Convert DVI, and to an AC outlet. If your Convert DVI comes with an external power supply cable with international adapter plugs for use in different regions, see "Convert DVI power supply and adapter plugs" on page 13.

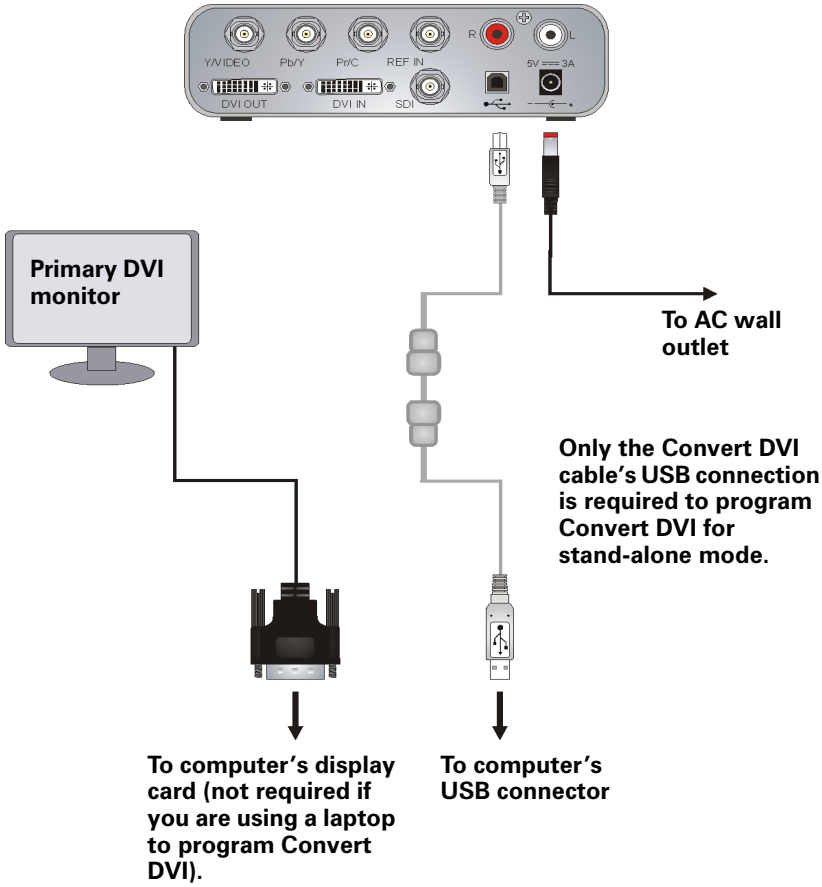
Note If your monitor has an HDMI or DisplayPort output, you can use a third-party HDMI to DVI or DisplayPort to DVI adapter.

Convert DVI connected to secondary DVI output



Connecting Convert DVI for programming stand-alone mode

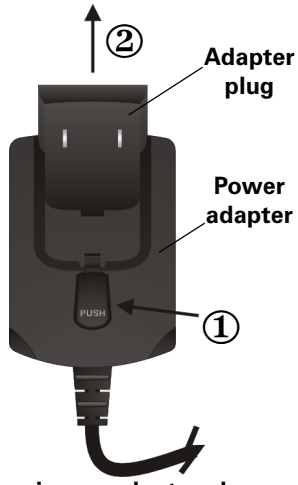
To program your Convert DVI for stand-alone mode, it must be connected using the USB cable to a computer that has the Convert DVI software installed. Although you can also use the connections illustrated in "Connecting Convert DVI to your computer's primary DVI output" on page 8, and "Connecting Convert DVI to your computer's secondary DVI output" on page 10, the illustration below shows the minimum connection that's required to program your Convert DVI for stand-alone mode.



Convert DVI power supply and adapter plugs

If your Convert DVI kit includes an external power supply cable with international adapter plugs for use in different regions, the following instructions detail how to remove and insert the adapter plugs:

- To remove an adapter plug from the power adapter, hold down the button labeled **PUSH** on the power adapter, and then slide the adapter plug up until it releases from the power adapter.
- To insert an adapter plug into the power adapter, ensure that the adapter plug is properly aligned with the corresponding slot on the power adapter, and then slide the adapter plug down into the power adapter until it locks into place.



Removing an adapter plug

Inserting an adapter plug

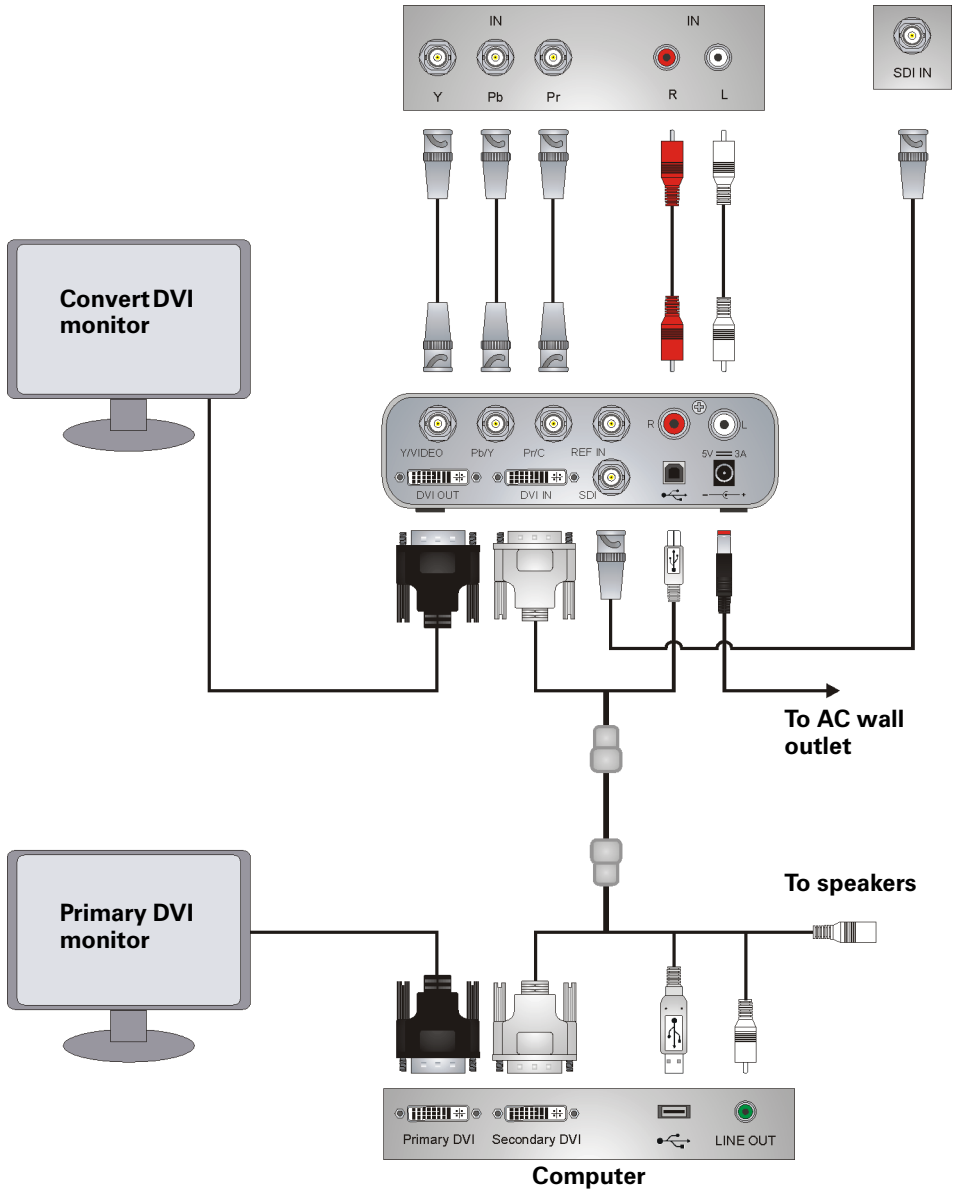
Typical Matrox Convert DVI connections

The following three illustrations show some typical Convert DVI connections. In the first two illustrations, we've connected a DVI monitor to preview the Convert DVI desktop, and also two different types of video devices to the Convert DVI outputs (such as analog component and SDI). We've also connected the audio output from the Convert DVI box to one of the video devices, but you can connect it to a sound mixer if you are using one. In the last illustration, we show the required connections for using Convert DVI in stand-alone mode with analog component and SDI connections.

Remarks

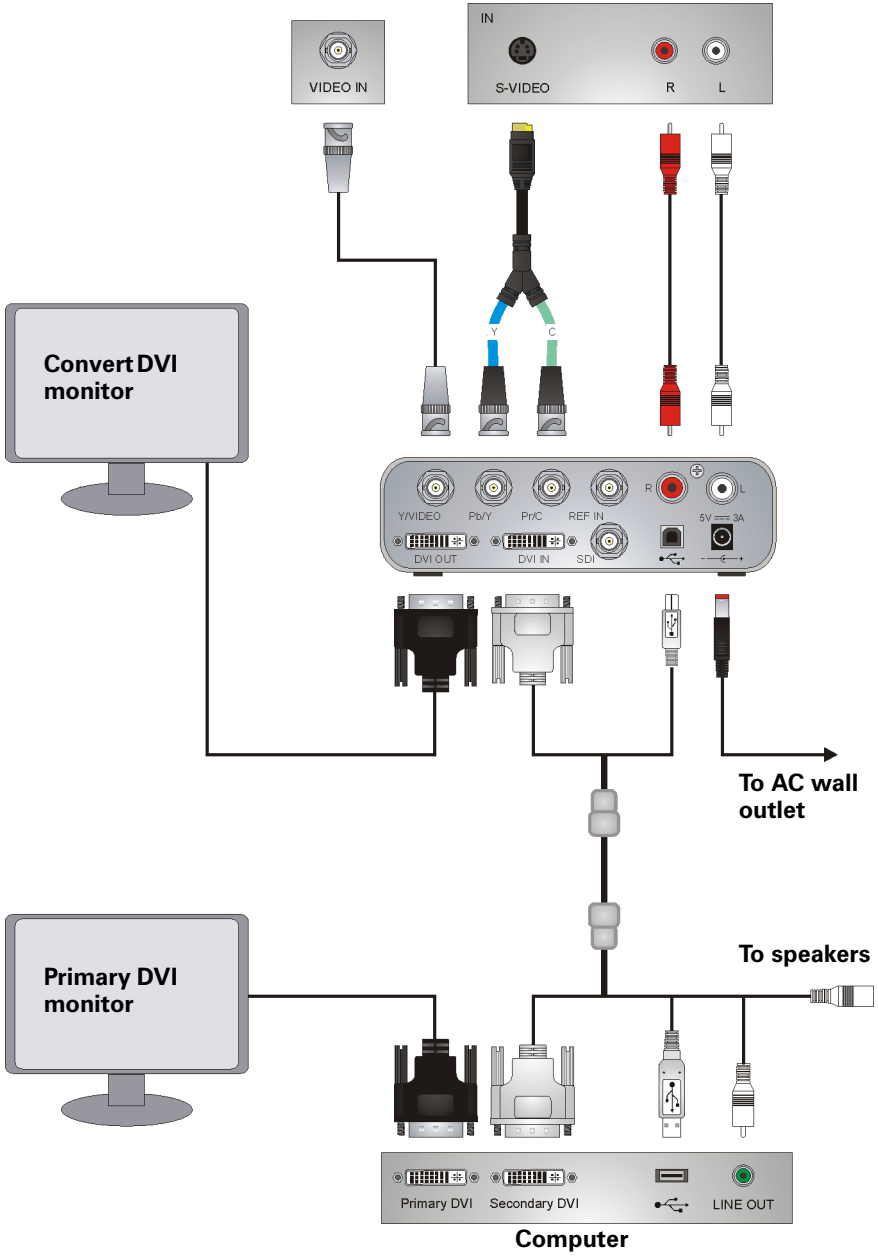
- The USB connections in these illustrations are required only when you want to configure Convert DVI, and are not needed if you want to use Convert DVI in stand-alone mode.
- You can also connect an external sync generator to ensure proper equipment timing. However, this is optional as the Convert DVI generates its own internal reference signal if an external genlock is not available.

Analog component and SDI connections

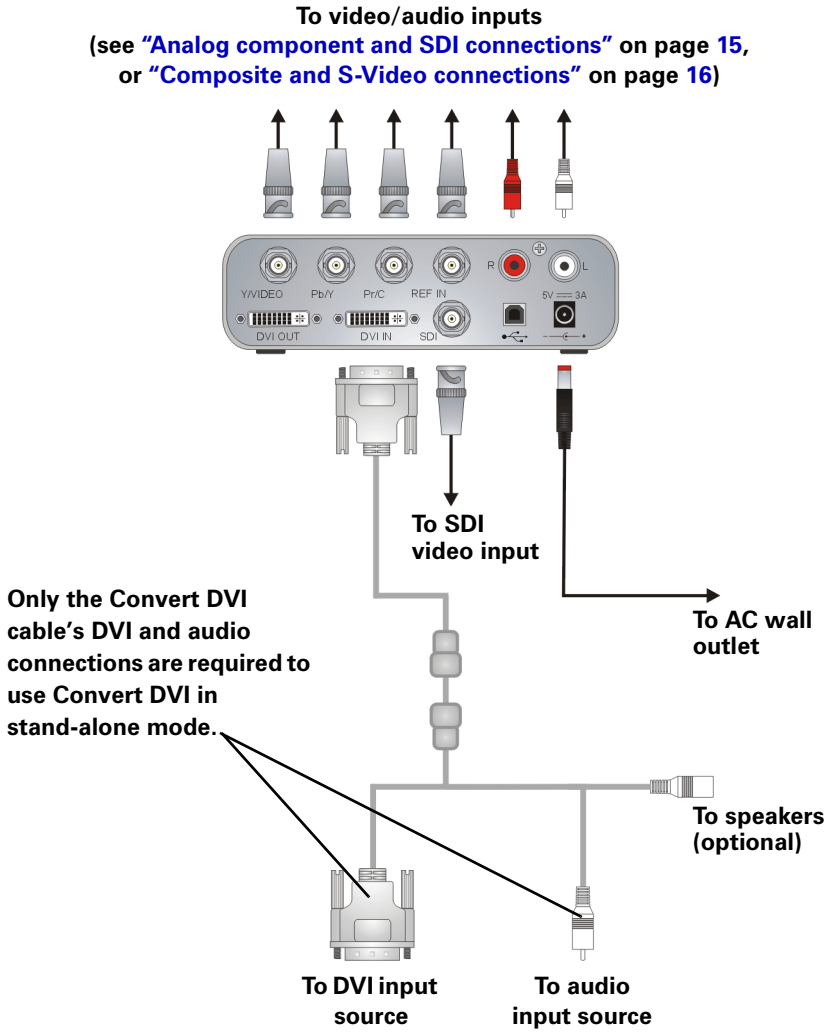


Typical Matrox Convert DVI connections

Composite and S-Video connections



Connections for using Convert DVI in stand-alone mode



Typical Matrox Convert DVI connections

Your notes

3

Installing Your Matrox Software and Configuring Your Display Settings

This chapter explains how to install and remove your Matrox software, and how to configure your display settings to use Matrox Convert DVI.

Hardware detection

The first time you connect your Convert DVI to your computer's USB port (and your computer is on), Windows will detect your Convert DVI hardware, and the "Found New Hardware Wizard" may be displayed. Because the Matrox ConvertUtils Setup program will automatically install the appropriate drivers for Convert DVI, you can ignore the wizard (or press **ESC** or click **Cancel** to close the wizard), and install your Matrox software as explained in the next section.

Note Your display card's configuration utility may also detect Convert DVI as a secondary monitor, and may prompt you to configure your display settings. You can configure your display settings before or after installing the Matrox software. For more information on configuring your display settings, see "Configuring your display settings for use with Convert DVI" on page 21.

Installing your Matrox software

Perform the following steps to install the Convert DVI software:

1. Make sure that your Convert DVI is connected to your computer using the USB connectors (see "Connecting Convert DVI" on page 7). Convert DVI's DVI connection to your computer is not required for software installation.
2. Before installing the Matrox Convert DVI software, make sure that you first uninstall any previous version of the software from your computer.
3. To download and install the latest version of the Matrox Convert DVI software, visit the "Downloads" section of our Support website at www.matrox.com/video/support. The software installer that you use to install the Convert DVI software depends on your Convert DVI system:
   - **Convert DVI only** If your system includes a Convert DVI only, download and install the Matrox ConvertUtils "Software" for your Convert DVI product.
   - **Convert DVI and Matrox MXO2/Mojito MAX** If you want to use Convert DVI and a Matrox MXO2 product or Mojito MAX on the same system, download and install the Matrox MtxConvert.utils "Combo Software" for your Convert DVI product.
   - **Convert DVI and Matrox VS4** If you want to use Convert DVI and Matrox VS4 on the same system, download and install the Matrox Mtx.utils "Combo Software (VS4)" for your Convert DVI product.

   For Windows 7 users When installing Matrox ConvertUtils on a Windows 7 system, Windows will check the Microsoft Windows Update website for the latest device drivers, which will slow down the installation. To prevent this, click the status message that appears in the Windows notification area during the driver installation, and in the displayed dialog box, click "Skip obtaining driver software from Windows Update."

Firmware update

When you install Matrox ConvertUtils, the software installation automatically verifies the firmware on your Convert DVI hardware and updates it if required.

Important To complete the firmware update, your computer must be shut down and Convert DVI must be powered off. Once your computer has shut down, unplug Convert DVI from its power source, and then re-plug it before restarting your computer.

Removing your Matrox software

To uninstall the software for Matrox Convert DVI, choose **Start > All Programs > Matrox ConvertUtils > Uninstall Matrox ConvertUtils**.

If you connect Convert DVI to a different USB port (Windows XP only)

If you connect Convert DVI to a different USB port after you've installed the Convert DVI software on a Windows XP system, the "Found New Hardware Wizard" will appear again. You won't need to re-install the Convert DVI software, but you'll need to use the "Found New Hardware Wizard" to install the required drivers. When the "Found New Hardware Wizard" opens and asks you if it can search for the software, select **No, not this time**, and click **Next**. For each device, select **Install the software automatically (Recommended)**, and then click **Next**. Repeat this step each time the wizard appears until all the required drivers have been installed.

Configuring your display settings for use with Convert DVI

When the Convert DVI hardware is connected to your computer as explained in "Connecting Convert DVI" on page 7, and the software has been successfully installed (see "Installing your Matrox software" on page 20), Windows will detect Convert DVI as a monitor. If you connected Convert DVI to your display card's secondary DVI output, in order to see the Convert DVI desktop, you need to enable the DVI output by extending or duplicating (cloning) your displays.

Important If you connected Convert DVI to your display card's primary DVI output (where you would normally connect your main monitor), you do not need to extend or duplicate your displays because your display card's primary output is enabled by default. However, if you will not be connecting a monitor to Convert DVI's DVI OUT connector, it's recommended that you duplicate your primary desktop.

- **Extend your displays** You can connect a DVI monitor or other display device, such as a projector, to Convert DVI's DVI OUT, and then extend your primary display to the Convert DVI's display. This will allow you to use the Convert DVI to preview your video output. For example, you can have the Convert DVI Control Panel open on your primary display, and simultaneously have a video clip open on the Convert DVI's display. This allows you to work on your primary display, while ensuring that only the video clip on the Convert DVI's display is being routed to the Convert DVI's analog and SDI video outputs.
- **Duplicate (clone) your displays** You can also duplicate your primary display onto your Convert DVI's display. This ensures that your primary display is being routed to the Convert DVI's analog and SDI video outputs. This option is useful if you don't have a secondary monitor to connect to Convert DVI's DVI OUT, or if you are conducting a training video for example, where you want your audience to see everything you are doing on your primary display. If your primary display does not support your desired desktop resolution, you can change your display settings to make Convert DVI your primary display, allowing you to select any resolution supported by Convert DVI.

Remarks

- No matter which of your display card's DVI outputs you use for Convert DVI, you must configure Convert DVI's display resolution according to how you want to use Convert DVI.
- Although the instructions provided in this section describe how to use Windows to configure your display settings, you can use your display card's configuration utility if you prefer.
- It is recommended that you install the latest display drivers for your system's display card before working with Convert DVI. For more information, see your display card's documentation.

⇨ **To configure your display settings in Windows:**

1. Right-click on your desktop and choose **Screen Resolution** (Windows 7), or **Properties** and then click the **Settings** tab (Windows XP).

Note From the **Start** menu, choose **Control Panel > Appearance and Personalization > Screen Resolution** (Windows 7), or **Settings > Control Panel > Display**, and then click the **Settings** tab (Windows XP).

2. Extend or duplicate (clone) your displays as follows:

Note If you connected Convert DVI to your display card's primary DVI output (where you would normally connect your main monitor), you do not need to extend or duplicate your displays because your display card's primary output is enabled by default. However, if you will not be connecting a monitor

to Convert DVI's DVI OUT connector, it's recommended that you duplicate your primary desktop.

For Windows 7:

- **Extending your primary display** If you see two monitor icons displayed, from the **Multiple displays** list, select **Extend these displays**. If you see more than two monitor icons displayed, click the monitor icon that represents your Convert DVI (click **Identify** if you're not sure), and then from the **Multiple displays** list, select **Extend desktop to this display**.
- **Duplicating (cloning) your primary display** If you see two monitor icons displayed, from the **Multiple displays** list, select **Duplicate these displays**. If you see more than two monitor icons displayed, click the monitor icon that represents your Convert DVI (click **Identify** if you're not sure), and then from the **Multiple displays** list select, **Duplicate desktop on 1 and 2** (or whichever combination represents your primary and Convert DVI displays).
- **Duplicating your Convert DVI display** Make Convert DVI your primary display by clicking the monitor icon that represents your Convert DVI (click **Identify** if you're not sure), select **Make this my main display**, and then click **Apply**. Then, from the **Multiple displays** list, select **Duplicate these displays**.

For Windows XP:

- **Extending your primary display** Click the monitor icon that represents your Convert DVI (click **Identify** if you're not sure), select **Extend my Windows desktop onto this monitor**, and then click **Apply**.
- **Duplicating (cloning) your primary display** Use your display card's configuration utility to duplicate your primary display on your Convert DVI display. Refer to your display card's documentation for more information.
- **Duplicating your Convert DVI display** Make Convert DVI your primary display by clicking the monitor icon that represents your Convert DVI (click **Identify** if you're not sure), select **Use this device as the primary monitor**, and then click **Apply**. You must then use your display card's configuration utility to duplicate your Convert DVI display. Refer to your display card's documentation for more information.

3 Click the monitor icon that represents your Convert DVI (click **Identify** if you're not sure), and from the list, set the desired resolution for your Convert DVI desktop according to how you want to use Convert DVI:

- If you want to output your entire Convert DVI desktop, it is recommended that your Convert DVI desktop resolution and video output format are

close in size. For example, if you want to output NTSC video, set your Convert DVI desktop resolution to 800×600 for best results.

- If you want to output a specific area of your Convert DVI desktop (see "Specifying your region of interest settings" on page 35), it is recommended that you set your Convert DVI desktop resolution to the native resolution of the monitor that is connected to it.
- If you plan on using Convert DVI in stand-alone mode, set your Convert DVI desktop resolution to the resolution of the DVI input device that will be connected to Convert DVI in stand-alone mode (see "Stand-alone mode" on page 46).

Supported Convert DVI desktop resolutions

Convert DVI supports the following common desktop resolutions (some resolutions may not be supported on all display cards or DVI input devices):

- 640×480 @ 60 Hz and 75 Hz
- 720×480 @ 60 Hz
- 720×576 @ 50 Hz and 60 Hz
- 800×600 @ 50 Hz, 60 Hz, and 75 Hz
- 832×624 @ 75 Hz
- 1024×768 @ 50 Hz, 60 Hz, and 75 Hz
- 1152×870 @ 75 Hz
- 1280×720 @ 50 Hz and 60 Hz
- 1280×1024 @ 50 Hz, 60 Hz, and 75 Hz
- 1600×1200 @ 50 Hz and 60 Hz
- 1680×1050 @ 50 Hz and 60 hz
- 1920×1080 @ 50 Hz and 60 Hz
- 1920×1200 @ 50 Hz and 60 Hz

Remarks

- By default, Convert DVI supports only the 60 Hz and 75 Hz resolutions. The 60 Hz resolutions provide optimal results for outputting video at 29.97 fps or 59.94 fps, such as NTSC and 1920×1080i @ 59.94 fps. To enable the 50 Hz resolutions for use with PAL, 1280×720p @ 50 fps, or 1920×1080i @ 25 fps video, or to change the supported display modes. see "Specifying your Convert DVI display modes" on page 40.
- If you want to set your Convert DVI resolution to 640×480, 720×480, or 720×576, you must use your display card's configuration utility to do so, as Windows does not allow you to set your resolution to anything lower than 800×600.

- Other resolutions may work with Convert DVI, but only the resolutions listed above have been tested and approved by Matrox for use with Convert DVI.

If you have display issues when starting Windows

After connecting Convert DVI and starting your computer, if your primary display is black, has an incorrect resolution, or your system does not detect your primary display, one of the issues in the following sections may be the cause.

If Convert DVI is connected to your primary DVI output

If you connected Convert DVI to your display card's primary DVI output (where you would normally connect your main monitor), and the monitor you connected to Convert DVI's DVI output is black when you start your computer, Convert DVI may be currently running in a 50 Hz display mode (for more information, see "Specifying your Convert DVI display modes" on page 40). One of the following procedures may resolve the issue:

- **Adjust your display resolution:**
  - **a** Disconnect Convert DVI from your computer's primary DVI output, but keep Convert DVI connected to your computer via the USB connection.
  - **b** Connect your monitor to your display card's primary DVI output.
  - **c** Using your display card's configuration utility, change your display resolution to 1280×1024 @ 60 Hz (Convert DVI's default 60 Hz resolution).
  - **d** Disconnect your main monitor, reconnect Convert DVI to your display card's primary DVI output, and then connect your monitor to Convert DVI's DVI output. You should be able to see your desktop, and you can further adjust your settings as needed.
- **Reset Convert DVI to the default 60 Hz and 75 Hz display modes:**
  - **a** Disconnect Convert DVI from your computer's primary DVI output, but keep Convert DVI connected to your computer via the USB connection.
  - **b** Connect your monitor to your display card's primary output.
  - **c** Open the Convert DVI Control Panel, and then click **Reset DVI Out** on any of the control panel's pages. You will be prompted to restart your computer.
  - **d** After you have restarted your computer, disconnect your monitor, reconnect Convert DVI to your display card's primary DVI output, and then connect your monitor to Convert DVI's DVI output. You should be

able to see your desktop, and you can further adjust your settings as needed.

If Convert DVI is connected to your secondary DVI output

If you connected Convert DVI to your secondary DVI output, your system may have incorrectly set your primary display resolution, or automatically set the Convert DVI as your primary display because the Convert DVI is capable of using a higher resolution than the physical monitor connected to your primary DVI output. If this happens, follow the steps below:

1. Disconnect the Convert DVI from your display card.
2. Restart your system and log on to Windows.
3. Reconnect the Convert DVI to your display card's secondary DVI output, and then follow the steps in "Configuring your display settings for use with Convert DVI" on page 21.

If you accidentally connected the Convert DVI to the DVI OUT on your display card that is associated with your primary display, follow the steps below:

1. Disconnect both the Convert DVI and your monitor from your display card.
2. Connect your monitor to your display card's primary DVI output, and then restart your computer.
3. After you have restarted your computer, connect the Convert DVI to your display card's second DVI output, and then follow the steps in "Configuring your display settings for use with Convert DVI" on page 21.

Retrieving a window from the Convert DVI desktop

If you are extending your primary desktop to your Convert DVI desktop, certain applications may open windows on your Convert DVI desktop instead of your primary desktop. If you later disconnect the monitor from Convert DVI's DVI output, you will not be able to see any windows that open on your Convert DVI desktop, and you may need to retrieve the hidden windows.

To retrieve a hidden window:

1. Right-click the program window on your taskbar, and then click **Move.**

Note If you see that **Move** is unavailable when you right-click the program window, it means the hidden window has been minimized. Click **Restore** and then repeat step 1.

2. Press one of the arrow keys on your keyboard to lock your mouse cursor onto the window, and then drag the window back to your primary display.

4

Configuring Matrox Convert DVI

This chapter explains how to set your Convert DVI settings.

Using the Matrox Convert DVI Control Panel

The Matrox Convert DVI Control Panel includes various settings for configuring the Matrox Convert DVI video output, genlock, and region of interest settings. You can also set your administartion settings in the Matrox Convert DVI Control Panel.

Remarks

- In order to configure Convert DVI, it must be connected to your computer via the USB connectors as explained in "Connecting Convert DVI" on page 7.
- Before configuring Convert DVI as explained in this chapter, you should make sure that you have specified your desired display settings for the Convert DVI desktop (see "Configuring your display settings for use with Convert DVI" on page 21). If you change your Convert DVI desktop's display settings **after** configuring Convert DVI, the video output may be distorted. If this happens, you must re-configure your Convert DVI settings.
- Depending on your Conver DVI hardware, some of the options described in this chapter may not be available, and your Matrox Convert DVI Control Panel may not appear exactly as shown.

Opening the Matrox Convert DVI Control Panel

To open the Convert DVI Control Panel, do one of the following:

- Double-click the icon on the Windows taskbar.
- Right-click the icon and then choose **Open Matrox Convert DVI Control Panel**.
- Choose **Start > All Programs > Matrox ConvertUtils > Matrox Convert DVI Control Panel.**

Switching between Convert DVI user accounts

To ensure proper functionality of Convert DVI when using the Fast User Switching method to switch between two Convert DVI users, the Matrox Convert DVI Control Panel must be closed on the current user account before switching user. Matrox Convert DVI will not function properly if the Matrox Convert DVI Control Panel is open on two user accounts at the same time when using Fast User Switching. However, this does not apply when switching between user accounts using the log off/log on method.

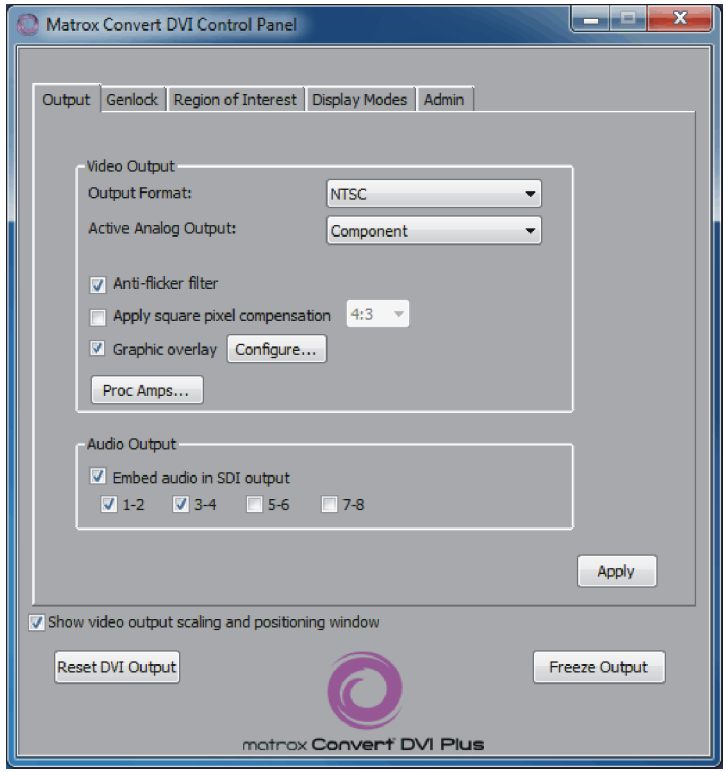
Specifying your output settings

This section details how to specify your Convert DVI video and audio output settings. Depending on your Convert DVI hardware, some of the output options described in this section may not be available, and may not appear exactly as shown.

Note You must click **Apply** for the changes to the output settings to take effect.

1 Open the Matrox Convert DVI Control Panel.

2 Click the **Output** tab.



3 From the **Output Format** list, select the video format that you want for Convert DVI's video output. However, your video output content, be it the entire Convert DVI desktop or a selected region of interest (see "Specifying your region of interest settings" on page 35), may not necessarily be displayed at this resolution. The scaling factor selected for your output content determines how it's displayed relative to the selected video output format (see "Scaling and positioning your output" on page 49).

Note To optimize the quality of your video output if you selected a PAL, 1280×720p @ 50 fps, or 1920×1080i @ 25 fps video output format, you must change the Convert DVI display mode settings to support 50 Hz video (see "Specifying your Convert DVI display modes" on page 40).

4 From the **Active Analog Output** menu, select the type of analog video output that you want. You can select either **Component** or **Composite and S-Video**. If you selected an HD output format, only **Component** will be available.

Note The SDI output is always active, and follows the SMPTE 259M (SD-SDI video) and SMPTE 292M (HD-SDI video) specifications.

5 The **Anti-flicker filter** option is enabled by default to prevent flickering when previewing interlaced video. You may want to clear this option when working with graphics files, or when displaying full-screen video. This option is disabled when outputting a 720p video format (see step 3).

6 When outputting SD video (NTSC, NTSC-J, or PAL), select **Allow square pixel compensation** to maintain your output content's aspect ratio on the video output, and then choose the aspect ratio (**4:3** or **16:9)** of the monitor connected to Convert DVI's video output. If performing a print-to-tape, select the aspect ratio that you want for your print-to-tape file.

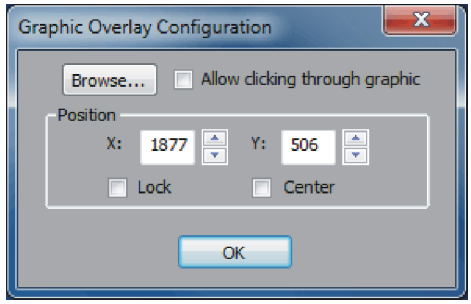
If aspect ratio preservation is not important, disable this option to output the crispest possible image. Disable this option if a DVI-D device that is connected to Convert DVI's DVI input in stand-alone mode (see "Stand-alone mode" on page 46) applies square pixel compensation at the source.

Note This option is available only when outputting an SD format, and when the **Scale to fit horizontally** or **Scale to fit vertically** scaling option is selected (see "Scaling and positioning your output" on page 49).

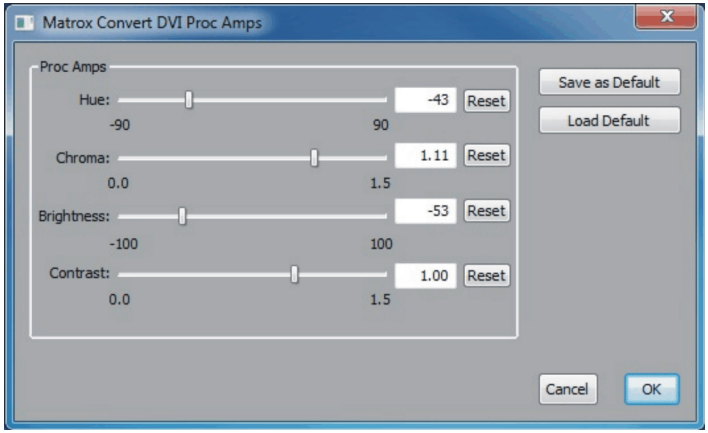
7 For Matrox Convert DVI Plus only, the **Graphic Overlay** feature lets you add a custom graphic, such as a company logo, anywhere on the Convert DVI desktop. Convert DVI supports *.png files*, and 32-bit compressed (RLE) and 32-bit uncompressed *.tga* files only.

Select **Graphic overlay** to enable the feature, and then click **Configure** to select a file and position it on the Convert DVI desktop. When configuring the graphic overlay, select **Center** at any time to position the graphic at the center of your Convert DVI desktop, or **Lock** to lock the graphic in its current position. If you need to access a section of the screen that is directly behind the graphic overlay, select **Allow clicking through graphic**. You

can also position the file manually by using your mouse to drag the graphic to the desired position.



8 For Matrox Convert DVI Plus only, click **Proc Amps** to adjust the **Hue**, **Chroma**, **Brightness**, and **Contrast** levels of your video output. Click **Save as Default** to save the current settings as the default settings, which overrides the previously saved settings. Click **Load Default** at any time to load the latest default settings. Click **OK** when done.



9 Under **Audio Output**, select **Embed audio in SDI output** if you want the audio from your computer to be embedded in Convert DVI's SDI output signal. Since Convert DVI supports only one stereo pair (pair 1/2) from your computer on input, and Convert DVI's SDI output supports eight audio channels (four stereo pairs), you must select the SDI stereo pair(s) that will be used to output the audio from your computer. The stereo pair from your computer is duplicated on every selected SDI stereo pair. For example, if **3-4** and **5-6** are selected, the stereo pair from your computer will be outputted on SDI stereo pairs 3/4 and 5/6. The SDI stereo pairs that are not selected are muted.

10 Click **Apply** for the changes to take effect. The **Apply** button is active only when a change is made to the current output settings.

Tip Press **CTRL+SHIFT+F1** to apply changes (see "Managing keyboard shortcuts" on page 48).

Freezing the Convert DVI output (Convert DVI Plus only)

Convert DVI Plus users can freeze the video output at any time by clicking **Freeze Output**. When the video output is frozen, any changes made to the Convert DVI settings will not take effect until the video output is no longer frozen. If your output content contains a video clip, it will also be frozen on your video output when the Convert DVI output is frozen.

Tip Press **CTRL+SHIFT+F6** to freeze/unfreeze the Convert DVI output (see "Managing keyboard shortcuts" on page 48).

Note To avoid video output issues, do not change the video output format when the Convert DVI output is frozen (see "Specifying your output settings" on page 29).

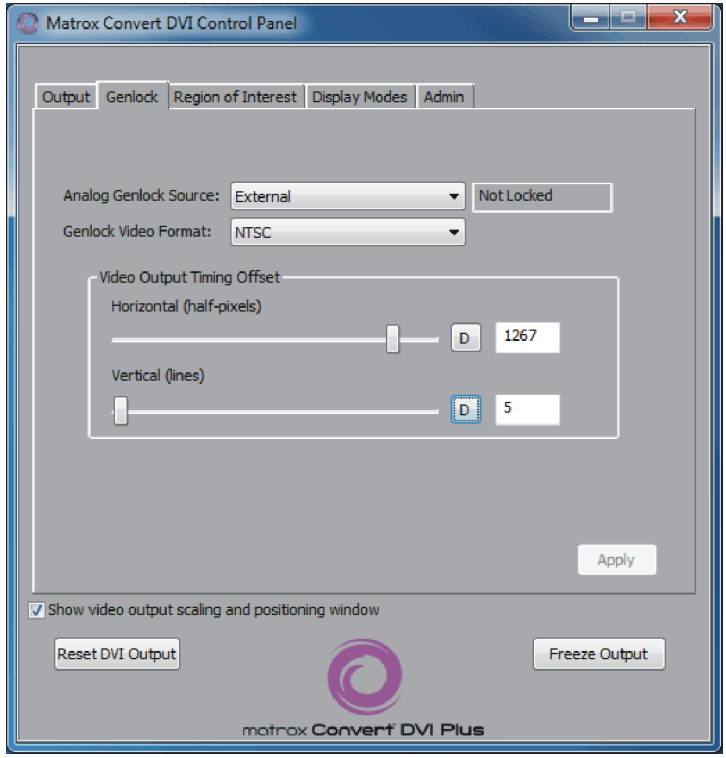
Specifying your genlock settings

This section details how to specify your Convert DVI genlock settings.

Note You must click **Apply** for the changes to the genlock settings to take effect.

1 Open the Matrox Convert DVI Control Panel.

2 Click the **Genlock** tab.



3 From the **Analog Genlock Source** menu, select one of the following:

- **Internal** Select this to genlock to Convert DVI's internal reference signal. Select this option only if you don't have an external sync generator connected to the REF IN on your Convert DVI.
- **External** Select this if you connected an external sync generator to the REF IN on your Convert DVI.

The status of your genlock source will be displayed as **Locked** or **Not Locked** to indicate whether or not Matrox Convert DVI is presently locked to your genlock source.

4 If you're genlocking to an external source, from the **Genlock Video Format** menu, select your external genlock source's video format.

Important To ensure good output results, make sure that your external genlock source's video format is compatible with the Convert DVI video output format.

5 If you're genlocking to an external source, click **Apply** if required, and then use the horizontal and vertical settings under **Video Output Timing Offset** to adjust the timing of the video output relative to your external genlock source. This lets you compensate for cable delays within your system. Click the D button to return a slider to its default position.

Note To automatically apply the timing offset settings, and to view the timing offset adjustments live on your video output, make sure to **Apply** the genlock settings before adjusting the timing offset. If you do not **Apply** the genlock settings before, the timing offset settings will not be automatically applied, and any adjustments you make will not be live on your video output.

6 Click **Apply** for the changes to take effect. The **Apply** button is active only when a change is made to the current genlock settings.

Tip Press **CTRL+SHIFT+F1** to apply changes (see "Managing keyboard shortcuts" on page 48).

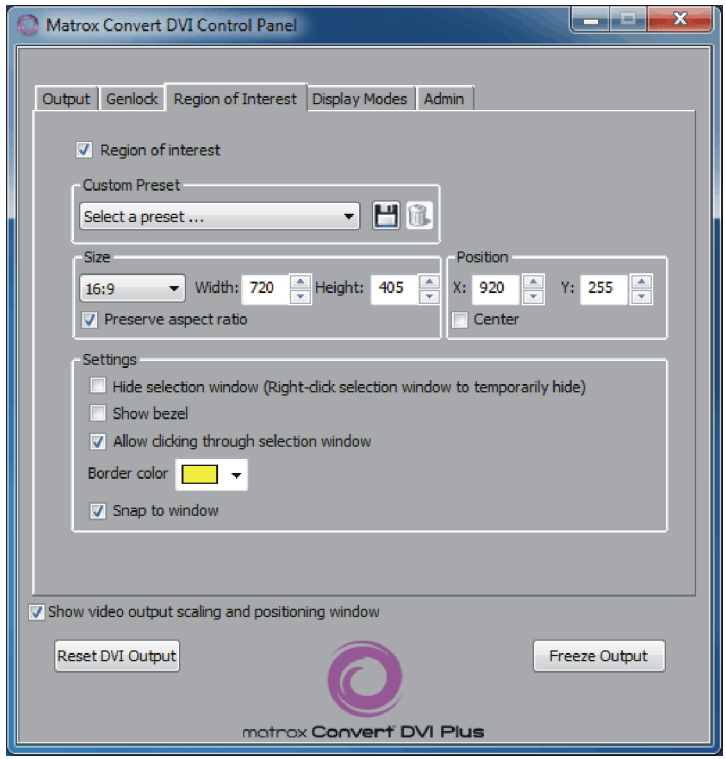
Specifying your region of interest settings

The region of interest feature lets you output a specific area of your Convert DVI desktop, instead of the entire desktop. A customizable window is used to select the area of your Convert DVI desktop that you want to output. Only the content within the selection window border is displayed on the video output. The selection window border and the content behind the border are not visible on the video output. You can position the selection window to focus on a specific area of your Convert DVI desktop, or pan the selection window across the desktop to scan and output its contents in real time. You can also save, load, and delete custom region of interest presets.

Note Changes made to the region of interest settings are instantly applied to the Convert DVI video output.

1 Open the Matrox Convert DVI Control Panel.

2 Click the **Region of Interest** tab.



3 Select **Region of interest** to enable the region of interest feature and its options. When enabled, Convert DVI outputs only the content within the

region of interest selection window. When disabled, the entire Convert DVI desktop is displayed on the video output.

Tip Press **CTRL+SHIFT+F2** to enable/disable the region on interest feature (see "Managing keyboard shortcuts" on page 48).

4 Under **Custom Preset**, you can load and delete a previously saved region of interest preset, or save the current settings as a new preset:

- **Load** Select a previously saved region of interest preset from the list to load the preset's settings. You can also load a region of interest preset by using a keyboard shortcut (see "Managing keyboard shortcuts" on page 48).
- **Save** Click to save the current region of interest settings as a new preset. The new region of interest preset is automatically added to the Convert DVI keyboard shortcut list. See"Managing keyboard shortcuts" on page 48 to create a keyboard shortcut that can be used to load the region of interest preset.
- **Delete** Click to delete the currently selected region of interest preset.

5 Under **Size**, select **16:9** or **4:3** from the list if you want a region of interest with an aspect ratio of 16:9 or 4:3 respectively, or select **Custom** if you want a custom aspect ratio. To resize the region of interest selection window, either type values for **Width** and **Height**, or drag the selection window border (see "Adjusting the region of interest manually" on page 38). Select **Preserve aspect ratio** at any time to maintain the selection window's current aspect ratio when resizing. The **Preserve aspect ratio** option is enabled automatically when **16:9** or **4:3** is selected. Holding **SHIFT** when resizing the selection window using your mouse also maintains the window's aspect ratio.

Note If the selection window border becomes red when resizing, the current output scaling is not supported. If this occurs, the video output will display the last supported output until you resize the selection window so that its border is no longer red, or adjust the output scaling (see "Scaling and positioning your output" on page 49).

6 Under **Position**, type **X** and **Y** values to position the selection window on your Convert DVI desktop (0,0 places the window at the desktop's top-left corner). Select **Center** at any time to position the selection window at the center of your Convert DVI desktop.

Note You can also use your mouse to position the selection window. This allows you to pan the selection window across the desktop to scan and output its contents in real time (see "Adjusting the region of interest manually" on page 38).

7 Under **Settings**, set the following options:

- **Hide selection window** Select this option to hide the region of interest selection window. This option does not disable or enable the region of interest feature, but simply hides or shows the selection window. You can also right-click the selection window to hide it temporarily.

Tip Press **CTRL+SHIFT+F3** to hide/show the selection window (see "Managing keyboard shortcuts" on page 48).

- **Show bezel** If you selected a 16:9 or 4:3 aspect ratio in step 5, select this option to display the action-safe area (larger outline) and title-safe area (smaller outline) of the selection window. This feature is useful in identifying the areas of your clip that would be hidden by a bezel when displayed on a standard television screen.
- **Allow clicking through selection window** Selecting this option allows you to access objects on your Convert DVI desktop that are behind the region of interest selection window. In this mode, you can move the selection window by its borders only (see "Adjusting the region of interest manually" on page 38). When this option is disabled, you will not be able to access objects that are behind the selection window.

Tip Press **CTRL+SHIFT+F5** to enable/disable the click-through option (see "Managing keyboard shortcuts" on page 48).

- **Border color** Change the color of the selection window's border and bezel. This is useful when the current border color is difficult to see because of the background.
- **Snap to window** (Convert DVI Plus only) When this option is enabled, Convert DVI detects any window/pane that is under the current mouse position when positioning the region of interest window manually (see "Adjusting the region of interest manually" on page 38), and automatically adjusts the region of interest size to match the detected window/pane. This option is useful when you want to quickly select a specific window/pane in an application or website, such as YouTube. You can scan the Convert DVI desktop for any detectable windows/panes by dragging the region of interest window across the Convert DVI desktop. When a window/pane is detected, the region of interest window will automatically outline the detected window/pane. Release the mouse button to select the currently detected window/pane. Depending on the manner in which the application or website was created, Convert DVI may not detect all windows/panes.

  When **Snap to window** is enabled, you can resize the region of interest selection window using the control panel settings (see step 5), or manually using your mouse (see "Adjusting the region of interest manually" on page 38). To adjust the region of interest selection window's position, you

can do so using the control panel settings (see step 6), or the keyboard arrow keys when the selection window is the active window.

Note If the region of interest selection window border becomes red when scanning the Convert DVI desktop for detectable windows/panes, the current output scaling is not supported for that particular window size. If this occurs, the video output will display the last supported output until you resize the selection window so that its border is no longer red, or adjust the output scaling (see "Scaling and positioning your output" on page 49).

Adjusting the region of interest manually

The region of interest selection window defines the area of your Convert DVI desktop that is displayed on your video output when the region of interest feature is enabled. This section details how to manually resize and position the selection window using your mouse. See "Specifying your region of interest settings" on page 35 for instructions on how to resize and position the selection window using the control panel settings.

Note Only the content within the selection window border is displayed on the video output. The selection window border and the content behind the border are not visible on the video output.

Resizing

To manually resize the selection window, move the mouse pointer to one of the resize handles that are available on the selection window, and then drag to resize. Hold **SHIFT** when dragging the selection window to maintain its aspect ratio. When resizing, the video output updates with the new content when the mouse button is released.

Note If the selection window border becomes red when resizing, the current output scaling is not supported. If this occurs, the video output will display the last supported output until you resize the selection window so that its border is no longer red, or adjust the output scaling (see "Scaling and positioning your output" on page 49).

Positioning and panning

You can position the selection window to focus on a specific area of your Convert DVI desktop, or pan the selection window across the desktop to scan and output its contents in real time.

Note The panning feature is automatically disabled when **Snap to window** is enabled (see "Specifying your region of interest settings" on page 35).

To position or move the selection window, move the mouse pointer anywhere within the selection window border, or to the border if **Allow clicking through selection window** is enabled (see "Specifying your region of interest settings" on page 35), until the pointer becomes a hand icon, and then drag the selection

window. If **Snap to window** is enabled (see "Specifying your region of interest settings" on page 35), you can scan the Convert DVI desktop for any detectable windows/panes, and release the mouse button to select the currently detected window/pane.

Tips

- Right-click to temporarily hide the selection window and mouse icon.
- If **Allow clicking through selection window** is disabled (see "Specifying your region of interest settings" on page 35), double-click anywhere within the selection window border to center it on your Convert DVI desktop, and restore the window to a preset size and aspect ratio based on the current output format. In some cases, this may result in an unsupported scaling mode (selection window border becomes red). If this occurs, the video output will display the last supported output until you resize the selection window so that its border is no longer red, or adjust the output scaling (see "Scaling and positioning your output" on page 49).

Specifying your Convert DVI display modes

By default, Convert DVI supports a predefined set of common desktop resolutions at 60 Hz and 75 Hz. This is to ensure that Convert DVI functions with most DVI monitors/devices. The default 60 Hz resolutions provide optimal results for outputting video at 29.97 fps or 59.94 fps, such as NTSC and 1920×1080i @ 59.94 fps. However, you may need to change the supported Convert DVI display modes for the following reasons:

- If the Convert DVI video output format is set to PAL, 1280×720p @ 50 fps, or 1920×1080i @ 25 fps (see "Specifying your output settings" on page 29), you can optimize your video output by changing the Convert DVI display modes to support 50 Hz refresh rates.

Note To avoid display issues when changing the display modes to support 50 Hz refresh rates, the DVI monitor connected to the DVI OUT of your Convert DVI must also support 50 Hz refresh rates. If the monitor connected to Convert DVI's DVI output does not support a 50 Hz refresh rate, you can connect a video monitor or other display device to Convert DVI's analog or SDI outputs in order to see your Convert DVI desktop.

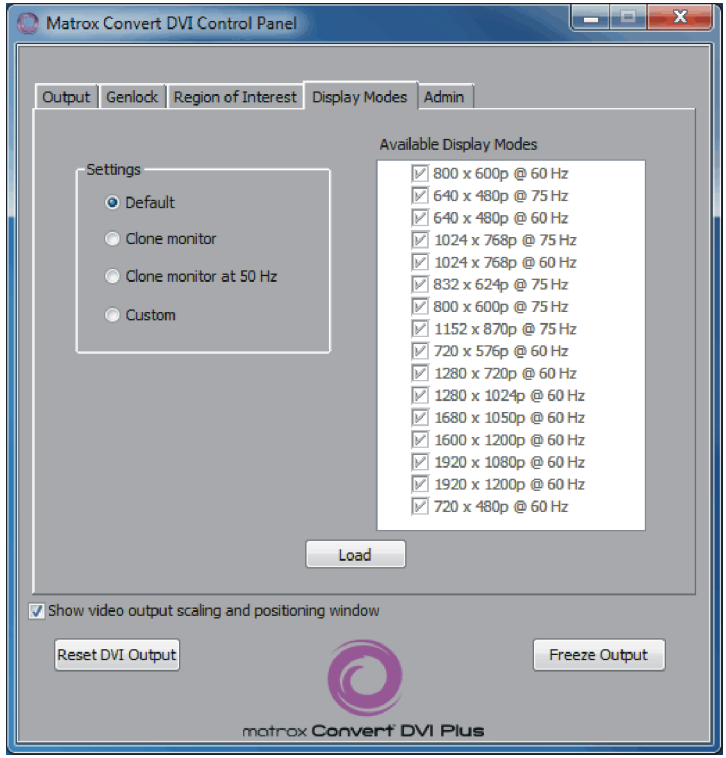
- If the display mode of the monitor/device that is connected to the DVI IN or DVI OUT connector on your Convert DVI is not supported by default.

Note You must restart your computer after changing the supported display modes for the changes to take effect.

⇨ To change the Convert DVI display modes:

1 Open the Matrox Convert DVI Control Panel.

2 Click the **Display Modes** tab.


Matrox Convert DVI Control Panel
Output
Genlock
Region of Interest
Display Modes
Admin
Settings
Default
Clone monitor
Clone monitor at 50 Hz
Custom
Available Display Modes
800 x 600p @ 60 Hz
640 x 480p @ 75 Hz
640 x 480p @ 60 Hz
1024 x 768p @ 75 Hz
1024 x 768p @ 60 Hz
832 x 624p @ 75 Hz
800 x 600p @ 75 Hz
1152 x 870p @ 75 Hz
720 x 576p @ 60 Hz
1280 x 720p @ 60 Hz
1280 x 1024p @ 60 Hz
1680 x 1050p @ 60 Hz
1600 x 1200p @ 60 Hz
1920 x 1080p @ 60 Hz
1920 x 1200p @ 60 Hz
720 x 480p @ 60 Hz
Load
Show video output scaling and positioning window
Reset DVI Output
Freeze Output
matrox Convert DVI Plus

3 Select one of the following display mode settings:

– **Default** Sets the Convert DVI desktop display modes to Convert DVI's default 60 Hz and 75 Hz resolutions (see "Convert DVI default display modes" on page 42). You can also set Convert DVI to default display modes by clicking **Reset DVI Output** (see "Resetting your Convert DVI display modes" on page 43).

– **Clone monitor** Sets the Convert DVI desktop display modes to those that are supported by the DVI monitor that is connected to Convert DVI's DVI output.

– **Clone monitor at 50 Hz** When this option is selected, Convert DVI takes the detailed timing display modes that are available on the DVI monitor that is connected to Convert DVI's DVI output, and sets them at 50 Hz. Detailed timing display modes are simply a group of resolutions on your monitor that have detailed display information associated with

them. Every monitor has at least one detailed timing display mode. In monitors with more than one detailed timing display mode, Convert DVI will support the first three display modes provided by the monitor.

– **Custom** Select this option to choose up to three display modes, in any combination, from the list of available 50 Hz, 60 Hz, and 75 Hz resolutions. This option can also be used to support a non-standard display mode when connecting a DVI-D device, such as a camera or medical device, to Convert DVI's DVI input when in stand-alone mode (see "Stand-alone mode" on page 46). From the **Available Display Modes** window, select up to three display modes.

Note Whichever display mode option you select, Convert DVI will always support 1280×1024p @ 60 Hz. This is to ensure Convert DVI's compatibility with a DVI monitor that supports only 60 Hz refresh rates when the Convert DVI display modes are set to 50 Hz. In such a case, you will not be able to see the Convert DVI desktop. This is especially problematic if you connected Convert DVI to your display card's primary DVI output. For more information, see "If you have display issues when starting Windows" on page 25.

4 Click **Load**, and then restart your computer when prompted.

5 After restarting your computer, if the resolution that you previously selected for your Convert DVI desktop is no longer supported after changing display modes, use the Windows display settings to change the Convert DVI desktop resolution (see "Configuring your display settings for use with Convert DVI" on page 21).

If the supported display modes include two with the same resolution but different refresh rate, such as 1280×1024 @ 50 Hz and 1280×1024 @ 60 Hz, use your display card's configuration utility to set your display card to run at the desired refresh rate.

Convert DVI default display modes

The following is a list of the default display modes that are supported by Convert DVI. You can set your Convert DVI to its default display modes by selecting **Default** in the **Display Modes** page (see "Specifying your Convert DVI display modes" on page 40), or by clicking **Reset DVI Output** (see "Resetting your Convert DVI display modes" on page 43).

- 640×480 @ 60 Hz and 75 Hz
- 720×480 @ 60 Hz
- 720×576 @ 60 Hz
- 800×600 @ 60 Hz and 75 Hz
- 832×624 @ 75 Hz
- 1024×768 @ 60 Hz and 75 Hz

- 1152×870 @ 75 Hz
- 1280×720 @ 60 Hz
- 1280×1024 @ 60 Hz
- 1600×1200 @ 60 Hz
- 1680×1050 @ 60 hz
- 1920×1080 @ 60 Hz
- 1920×1200 @ 60 Hz

Resetting your Convert DVI display modes

Perform the following steps to reset the Convert DVI display modes to the default 60 Hz and 75 Hz resolutions (see "Convert DVI default display modes" on page 42), or to resolve display issues (see "If you have display issues when starting Windows" on page 25).

Note The **Reset DVI Output** button is active whenever Convert DVI is connected to your computer via the Convert DVI USB connections.

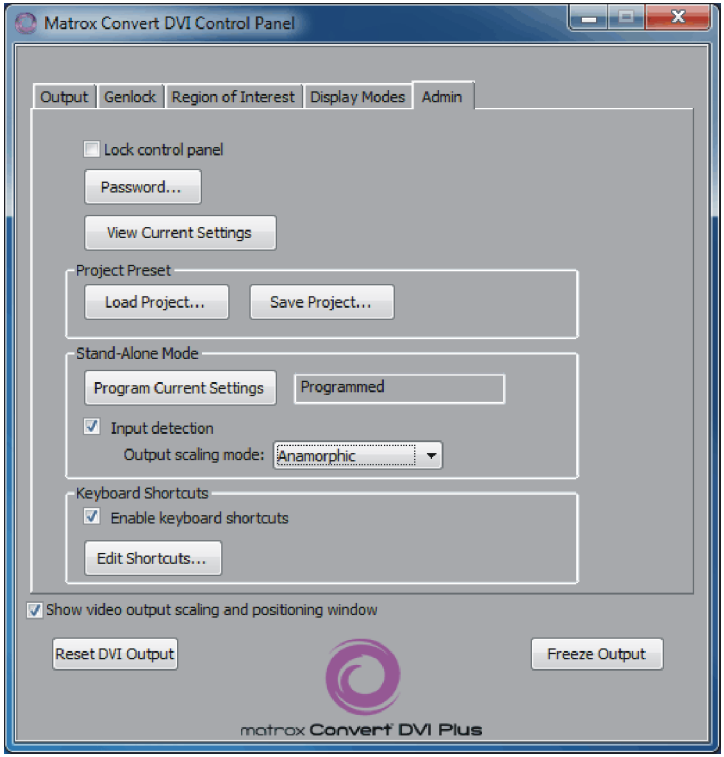
1. Open the Matrox Convert DVI Control Panel.
2. Click **Reset DVI Output**.
3. Restart your computer.

Specifying your administrator settings

The **Admin** page of the Convert DVI Control Panel is used for the various administrative actions and settings, such as programming stand-alone mode, loading and saving project presets, locking the control panel, and the management of your password and keyboard shortcuts.

1 Open the Matrox Convert DVI Control Panel.

2 Click the **Admin** tab.



3 Select or clear the **Lock control panel** option to lock or unlock the Matrox Convert DVI Control Panel and its options. When locked, the control panel settings will not be accessible, but Convert DVI will continue to output the desktop as per the current settings. To freeze the output, see "Freezing the Convert DVI output (Convert DVI Plus only)" on page 32.

Note A password is required to unlock the control panel.

4 Click **Password** to manage your Convert DVI password, which is required to unlock the control panel (see step 3). If no password exists in the system, you will be prompted to create a new password. If a password already exists, this option lets you change your Convert DVI password.

Note If you can't remember your current password, you can retrieve it from the Windows registry editor. Choose **Start** (Windows 7) or **Start > Run** (Windows XP), type *regedit* in the text box provided, and then press **ENTER**. In the registry tree on the left, go to *HKEY_CURRENT_USER\Software\Matrox\Video\Settings\Convert*, and then open the *Password* file. The current password appears under **Value data**.

5 Click **View Current Settings** to view the current control panel settings, stand-alone mode settings that are saved in the Convert DVI's internal memory, and the currently supported display modes.

6 Under **Project Preset**, click **Save Project** to save all current Convert DVI output, genlock, region of interest, and scaling and positioning settings as a project preset, or click **Load Project** to load a previously saved project preset.

Remarks

- Display mode settings (see "Specifying your Convert DVI display modes" on page 40) are not saved in a project preset.
- When loading a project preset, if the Convert DVI desktop resolution is different from what it was when the preset was saved, the resulting video output for the preset will not be the same.

7 Under **Stand-Alone Mode**, program your Convert DVI for use in stand-alone mode as described in "Stand-alone mode" on page 46.

8 Under **Keyboard Shortcuts**, select **Enable keyboard shortcuts** to use the designated shortcut keys to perform specific Convert DVI actions, or to load a custom region of interest preset. You can clear this option if you find that any of the keyboard shortcuts conflict with other software on your system. To view or edit the current keyboard shortcuts, click **Edit Shortcuts**. For instructions on editing the keyboard shortcuts, see "Managing keyboard shortcuts" on page 48.

Stand-alone mode

Convert DVI's stand-alone mode lets you use your Convert DVI with any device that has a DVI-D output in a supported desktop resolution (see "Supported Convert DVI desktop resolutions" on page 24). For example, you can connect Convert DVI to the DVI output from a camera or medical device, or the DVI output from a different computer from the host computer that you used to configure Convert DVI.

Note If your device has an HDMI or DisplayPort output, you can use a third-party HDMI to DVI or DisplayPort to DVI adapter.

When using Convert DVI in stand-alone mode, the DVI input on Convert DVI is converted to high-quality video and output through Convert DVI's SDI and analog outputs according to the programmed configuration settings.

This section details how to program and use Convert DVI in stand-alone mode.

Programming Convert DVI for stand-alone mode

To use Convert DVI in stand-alone mode, you must first program your desired stand-alone settings in Convert DVI's internal memory as described in this section.

Note If you install a new version of the Convert DVI software that initiates a firmware update on your Convert DVI, the programmed stand-alone settings will be erased from Convert DVI's internal memory.

1. Make sure that Convert DVI is connected to your computer via the Convert DVI USB cable (see "Connecting Convert DVI for programming stand-alone mode" on page 12), and that the computer has the Convert DVI software installed.

   Note The Convert DVI USB cable must be connected in order to make changes to the Convert DVI settings and to program your Convert DVI for stand-alone mode. The USB cable is not required to use Convert DVI in stand-alone mode. When connecting the USB cable, it may take up to a minute for the Convert DVI video output to resume. If the Matrox Convert DVI Control Panel does not respond after you have connected the USB cable, close and then re-open the control panel.

2. Set the Convert DVI desktop resolution to match the output resolution of the DVI device that you want to use with Convert DVI in stand-alone mode. However, if Convert DVI's input detection feature is enabled (see step 6), the Convert DVI desktop resolution will be ignored and Convert DVI will detect the output resolution of your DVI device. For information on setting your Convert DVI desktop resolution, see "Configuring your display settings for use with Convert DVI" on page 21.
3. Open the Matrox Convert DVI Control Panel.

4 Specify your Convert DVI settings. These settings will be used by your Convert DVI when in stand-alone mode.

Note Only the settings that have been **applied** to your video output will be programmed for stand-alone mode. If you make changes to the **Output** or **Genlock** settings, make sure to click **Apply** on those pages before programming for stand-alone mode. The **Graphic overlay** output option and the **Snap to window** region-of-interest option are not available in stand-alone mode.

5 Click the **Admin** tab.

6 Under **Stand-Alone Mode**, select **Input detection** if you want Convert DVI to automatically detect the output resolution of the DVI device connected to Convert DVI's input, and output the entire Convert DVI desktop (DVI input) according to the selected **Output scaling mode**:

- **Anamorphic** Outputs the content as full-screen anamorphic video.
- **Best fit** Outputs the content as either letterbox or pillarbox video, depending on the input and output resolutions, while maintaining the content's aspect ratio.

This feature is especially useful when you want to connect different resolutions to Convert DVI's input when in stand-alone mode. When input detection is selected, the programmed region of interest settings, and the programmed Convert DVI desktop resolution, are ignored.

7 Under **Stand-Alone Mode**, click **Program Current Settings** to copy the current Convert DVI settings to your Convert DVI's internal memory. When programming is complete, **Programmed** will appear in the status window.

Caution Do not disconnect Convert DVI's USB cable or power cord until the programming process is complete. Doing so may damage your Convert DVI hardware.

Using Convert DVI in stand-alone mode

After programming your Convert DVI for stand-alone mode (see "Programming Convert DVI for stand-alone mode" on page 46), perform the following steps to use your Convert DVI in stand-alone mode.

1 Connect Convert DVI as shown in "Connections for using Convert DVI in stand-alone mode" on page 17.

Note Ensure that the Convert DVI USB cable is disconnected from the Convert DVI.

2 Disconnect and then reconnect the power cord from Convert DVI. Your Convert DVI will boot in stand-alone mode.

Note You cannot make any changes to the Convert DVI settings when connected in stand-alone mode. To change the Convert DVI settings, Convert

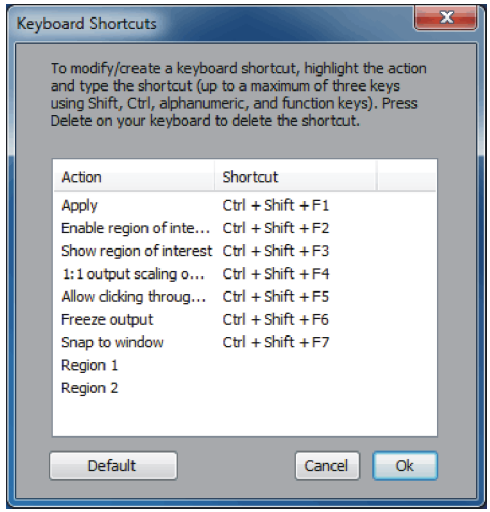
DVI must be connected using the USB cable to a computer that has the Convert DVI software installed. See "Programming Convert DVI for stand-alone mode" on page 46 for instructions on changing the Convert DVI stand-alone settings.

Managing keyboard shortcuts

Convert DVI comes with default keyboard shortcuts for performing specific actions. You can edit and delete these shortcuts from the **Keyboard Shortcuts** dialog box. You can also create, edit, and delete a keyboard shortcut for any custom region of interest preset in the system. The following steps detail how to edit, create, and delete keyboard shortcuts.

Note If any of the keyboard shortcuts conflict with other software on your system, you can either change the shortcut, or disable the keyboard shortcuts as explained in "Specifying your administrator settings" on page 44.

1. Open the Matrox Convert DVI Control Panel.
2. Click the **Admin** tab.
3. Under **Keyboard Shortcuts**, click **Edit Shortcuts**.


Keyboard Shortcuts
To modify/create a keyboard shortcut, highlight the action and type the shortcut (up to a maximum of three keys using Shift, Ctrl, alphanumeric, and function keys). Press Delete on your keyboard to delete the shortcut.
Action
Shortcut
Apply
Ctrl + Shift + F1
Enable region of inte...
Ctrl + Shift + F2
Show region of interest
Ctrl + Shift + F3
1:1 output scaling o...
Ctrl + Shift + F4
Allow clicking throug...
Ctrl + Shift + F5
Freeze output
Ctrl + Shift + F6
Snap to window
Ctrl + Shift + F7
Region 1
Region 2
Default
Cancel
Ok

4. To create, edit, or delete a keyboard shortcut, highlight the corresponding **Action**, and then either type the shortcut (up to a maximum of three keys using **SHIFT**, **CTRL**, alphanumeric, and functions keys), or press **DELETE** on your keyboard.
5. Click **Default** at any time to reset the keyboard shortcuts to default settings. Only the keyboard shortcuts for the Convert DVI actions (Apply, freeze output, etc.) will be reset to default settings. The keyboard shortcuts for custom region of interest presets will not be affected.

The following table lists the default keyboard shortcuts for the Convert DVI actions:

Action	Default shortcut
Apply	**CTRL+SHIFT+F1**
Enable/disable region of interest	**CTRL+SHIFT+F2**
Show/hide region of interest	**CTRL+SHIFT+F3**
1:1 output scaling option	**CTRL+SHIFT+F4**
Allow clicking through selection window	**CTRL+SHIFT+F5**
Freeze/unfreeze output[1]	**CTRL+SHIFT+F6**
Enable/disable the region of interest Snap-to-window option[1]	**CTRL+SHIFT+F7**

[1] Available for Convert DVI Plus only.

6 Click **OK** to save the changes.

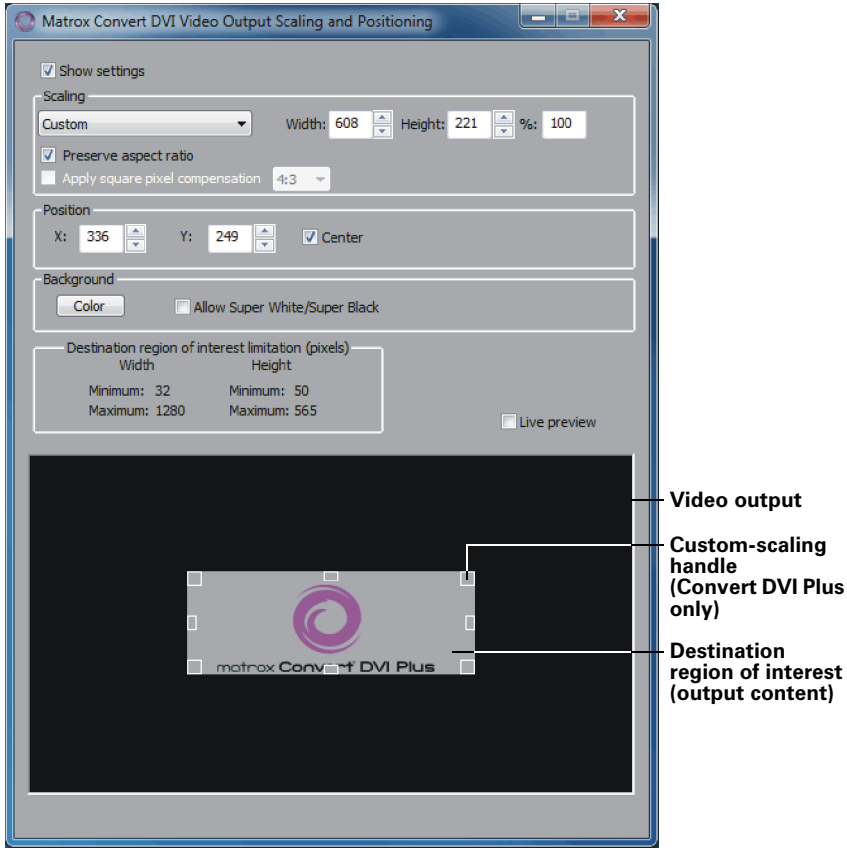
Scaling and positioning your output

If you're outputting the entire Convert DVI desktop, no matter which Convert DVI hardware you're using (Convert DVI or Convert DVI Plus), the output content can be upscaled or downscaled in relation to the specified video output format. If you're using the region of interest feature and are outputting a specific area of the Convert DVI desktop, Convert DVI Plus users can upscale or downscale the output content, while Convert DVI supports downscale only.

If using Convert DVI Plus, you can position your output content anywhere on the video output. If you're not using Convert DVI Plus, your output content will always be centered on the video output. The Convert DVI scaling window also shows a live preview of the video output. Depending on your Convert DVI hardware, some of the options described in this section may not be available, and may not appear exactly as shown.

1 Open the Matrox Convert DVI Control Panel.

2 Select **Show video output scaling and positioning window** (Convert DVI Plus), or **Show video output scaling and live preview window** (Convert DVI).



3 Select **Show settings** to display the options.

4 Under **Scaling**, choose one of the following scaling options from the list to scale your output content. The area that represents your output content in the preview window is referred to as the destination region of interest:

Important When scaling, if the destination region of interest becomes red and displays a warning icon, this means that the current scaling is not supported for your Convert DVI desktop (or region of interest) resolution. If this occurs, the video output will display the last supported output until you adjust the scaling so that the destination region of interest is no longer red, or change your Convert DVI resolution (see "Configuring your display settings for use with Convert DVI" on page 21), or input region of interest size (see

"Specifying your region of interest settings" on page 35). The **Destination region of interest limitation** box above the preview window shows the width and height limitations.

- **Anamorphic** Scales your original output content so that it fills the entire video output.
- **Scale to fit horizontally** Scales your original output content so that it fills the video output horizontally, while maintaining the aspect ratio.
- **Scale to fit vertically** Scales your original output content so that it fills the video output vertically, while maintaining the aspect ratio.
- **1:1 (no scaling)** Displays your original output content at its exact resolution without any scaling. You can also press **CTRL+SHIFT+F4** to set the scaling to 1:1 (see "Managing keyboard shortcuts" on page 48).
- **Custom** (Convert DVI Plus only) Select this option for custom scaling using the **Width** and **Height**, or **%** options. Press **ENTER** on your keyboard after typing the values. You can also scale manually by using the custom-scaling handles that are available on the destination region of interest.

Note Hold **SHIFT** when scaling manually to maintain the destination region of interest aspect ratio, or you can select **Preserve aspect ratio** to maintain the aspect ratio when scaling manually or when using the **Width** and **Height** options.

Tip Double-click the destination region of interest to scale it anamorphically. If anamorphic scaling produces an unsupported condition, the scaling is set to 1:1 (no scaling).

5 For Convert DVI only, select **Underscan mode** to reduce the video output by 10% to view the full video frame, which includes the edges of your video that may be visible only on production monitors. Clearing this option displays only the safe area of a video frame that is visible on all standard televisions and monitors.

Note Convert DVI Plus users can achieve the same result by using the available **%** option to reduce the video output by 10%.

6 When outputting NTSC, NTSC-J, or PAL video (see "Specifying your output settings" on page 29), select **Allow square pixel compensation** to maintain your output content's aspect ratio on the video output, and then choose the aspect ratio (**4:3** or **16:9)** of the monitor connected to Convert DVI's video output. If you're recording Convert DVI's video output to tape, select the aspect ratio that you want for your recording.

If aspect ratio preservation is not important, disable this option to output the crispest possible image. Disable this option if a DVI-D device that is connected to Convert DVI's DVI input in stand-alone mode (see

"Stand-alone mode" on page 46) applies square pixel compensation at the source.

Note This option is available only when outputting an SD format (see "Specifying your output settings" on page 29), and when the **Scale to fit horizontally** or **Scale to fit vertically** scaling option is selected.

7 For Convert DVI Plus only, under **Position**, type **X** and **Y** values to position the destination region of interest on the video output (0,0 places it at the top-left corner of the video output), or select **Center** to position it in the center of the video output. You can also position it manually by moving the mouse pointer anywhere within the destination region of interest until the pointer becomes a hand icon, and then drag to the desired position.

8 For Convert DVI Plus only, under **Background**, choose the **Color** for the video output background. This option can be useful if you want to chroma key the background. Select **Allow Super White/Super Black** to allow the highest luminance level of your video output to exceed the standard maximum white level, and the lowest luminance level of your video output to fall below the standard black level. This option can be useful for luma keying.

9 Select **Live preview** if you want the preview window to display a live representation of the video output. This option is especially useful when previewing a video output that contains a video clip. When this option is disabled, the preview window will update only after a change is made to the Convert DVI settings.

Note Convert DVI leverages your system's resources to perform the live preview. Disable this option to free your system's resources for other tasks, such as when playing back high-resolution video clips.

5

Monitoring Your Matrox Convert DVI System

This chapter explains how to use the Matrox X.info program to display important details about your Matrox Convert DVI system and installed hardware.

Using X.info to display Convert DVI information

The Matrox X.info program lets you display information about your Matrox Convert DVI system and installed hardware, and provides warnings when certain problems arise, such as when the temperature of your Convert DVI exceeds the maximum operating temperature.

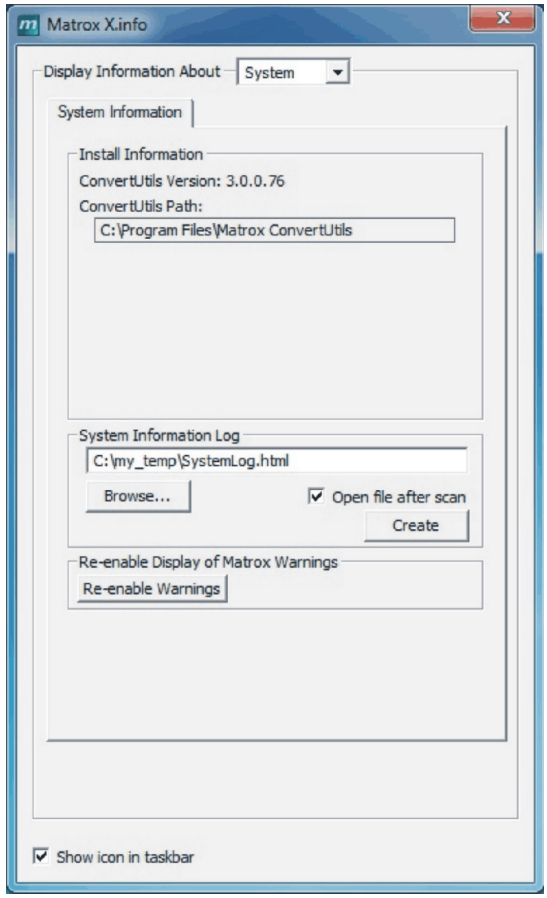
Matrox X.info runs continuously to monitor your system, whenever your computer is turned on and the Convert DVI is connected. You can open Matrox X.info to display system and hardware details by double-clicking the icon on your Windows taskbar.

Note If you do not see the icon, for Windows XP, right-click the notification area of the taskbar and choose **Properties**, clear the **Hide inactive icons** option, and then click **OK**. For Windows 7, right-click the notification area of the taskbar and choose **Properties**, click the **Taskbar** tab, select **Always show all icons and notifications on the taskbar**, and then click **OK**.

Displaying system information

To display information about your Matrox Convert DVI system, select **System** from the **Display Information About** list. On this page, you can see **Install Information**, such as the install path and version of Matrox ConvertUtils.

You can also create an HTML log file of your system information, which can be useful for troubleshooting. To create this log, use the **Browse** button under **System Information Log** to select the path and name of the log, then click **Create**. If **Open file after scan** is selected, the HTML system log opens after it is created.



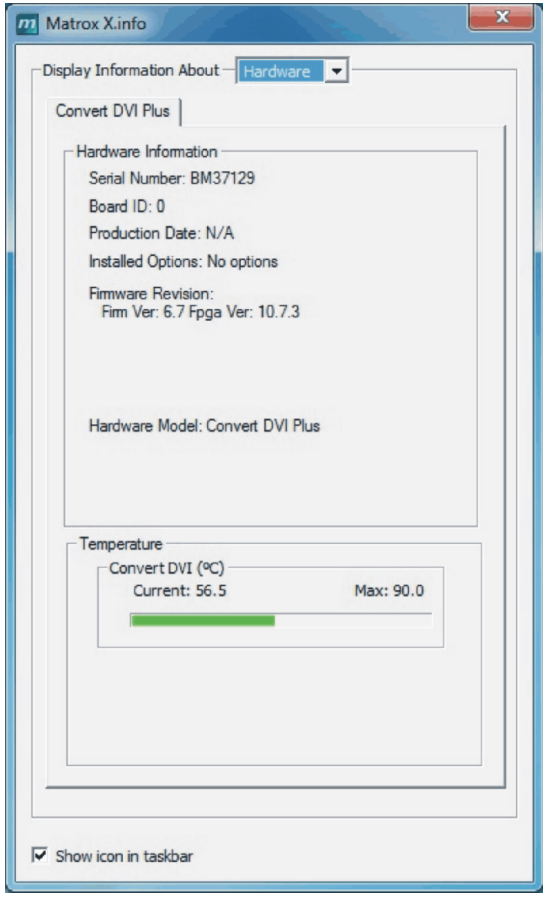
If you had previously turned off certain Matrox warnings and want them to be re-enabled, click **Re-enable Warnings**. For example, some Matrox warnings provide an option to turn off the warning (that is, you can select **Don't display this message again**). Clicking **Re-enable Warnings** allows these warnings to be displayed again.

Displaying hardware information

To display information about your Matrox Convert DVI hardware, select **Hardware** from the **Display Information About** list. This displays a page with hardware information (for example, serial number and production date). You can also monitor the current and maximum operating temperatures for your Convert DVI hardware.

Note For hardware information to be available, Convert DVI must be connected to your computer via the Convert DVI USB cable before logging on to Windows.

Important Whether or not you have opened Matrox X.info, if your Convert DVI exceeds the maximum operating temperature, you'll receive a warning message with further instructions as explained in the section "Error notification" on page 57.



Monitoring your Convert DVI's operating temperature

As shown in the X.info **Hardware** section, the **Convert DVI** page displays the current and maximum operating temperatures for your Matrox Convert DVI hardware. To avoid damage to your Matrox Convert DVI, make sure that you don't operate your Convert DVI at or near the maximum temperature for a prolonged period of time. You should target your Convert DVI to operate at least 10°C below the maximum operating temperature.

You should monitor the temperature of your Convert DVI periodically and take measures as needed to lower the room temperature and/or make sure that the Convert DVI is not close to a heat source and the ventilation holes are not obstructed.

Error notification

X.info provides temperature warnings and warnings for other possible Convert DVI hardware problems. Once X.info has detected a hardware problem, the **Matrox X.info Notification** dialog box will be displayed to give you details of the problem and further instructions. You will not be able to close this dialog box until the problem has been resolved.

Your notes

A

Matrox Convert DVI Specifications

This appendix provides specifications for the Matrox Convert DVI box.

Matrox Convert DVI box specifications

General

Video standards	NTSC, PAL, NTSC-EIAJ, 720p, 1080i
Regulatory compliance	FCC Class A, CE Mark Class A, C-Tick Mark, RoHS Directive 2002/95/EC
Dimensions	L 151 mm × W 161 mm × H 46 mm (5.94" × 6.34" × 1.81")
Operating voltages	External AC/DC adapter: 100-240 VAC 50-60 Hz (5 V DC, 3 A max.) Efficiency Level V
Total power consumption	Convert DVI: 10 watts Convert DVI Plus: 12 watts

Connections

DVI input and output	DVI-I (single-link) 29-pin port
Genlock reference input	SD analog black burst (bi-level) or HD tri-level sync BNC connector (75 Ω), terminated
SDTV SDI output	SD-SDI with eight channels of embedded SDI audio 24-bit, 48 kHz BNC connector (75 Ω) Compliant with SMPTE 259M-C, SMPTE 272M
SDTV S-Video & composite video output	PAL, NTSC, NTSC-EIAJ BNC connectors (75 Ω)
SDTV analog component video output	Betacam, Betacam SP (NTSC & NTSC-EIAJ) SMPTE/EBU N10 (PAL) BNC connectors (75 Ω)
HDTV SDI output	HD-SDI with eight channels of embedded SDI audio 24-bit, 48 kHz Compliant with SMPTE 292M, SMPTE 299M BNC connector (75 Ω)
HDTV analog component video output	720p, 1080i Compliant with EIA-770.3 BNC connectors (75 Ω)
Analog stereo line out	Left and right RCA connectors 4.35 Vp-p (+6 dBu) maximum output level
Analog stereo loop through	Input: Stereo 3.5mm male plug on Convert DVI cable Output: Stereo 3.5mm female jack on Convert DVI cable 4.35 Vp-p (+6 dBu) maximum input/output levels
Other	USB 2.0 type B port 2.5mm barrel power connector

Environmental specifications

- Minimum/maximum ambient operating temperatures: 0 to 35º C
- Minimum/maximum storage temperature: –40 to 75º C
- Maximum altitude for operation: 3,000 meters
- Maximum altitude for transport: 12,000 meters
- Operating humidity: 20 to 80% relative humidity (non-condensing)
- Storage humidity: 5 to 95% relative humidity (non-condensing)

Your notes

B

Matrox Customer Support

This appendix explains how you can register your Matrox product and obtain customer support.

How to get Matrox customer support

If you have a problem that you're unable to solve by referring to the documentation for your Matrox product, please contact your Matrox representative. He or she should be able to help you quickly correct any installation or system configuration problem.

If your representative is unable to solve your problem, contact Matrox for further information and assistance.

Registration

You can register your Matrox product in the Matrox Support section of our website at www.matrox.com/video/support.

Only registered users are entitled to customer support, software updates, special promotional offers, and access to our user forum.

Keep up to date with our website

In addition to registering your Matrox product, our website offers you up-to-the-minute information about Matrox products and software updates. Be sure to place our site in your favorites or bookmarks: www.matrox.com/video/support.

Contacting us

Matrox is proud to offer worldwide customer support. Please use the contact information for your Matrox product and area as provided on our website at www.matrox.com/video/support.

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Compliance Statements

USA

FCC Compliance Statement

Remark for the Matrox hardware products supported by this guide

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING

Changes or modifications to this unit not expressly approved by the party responsible for the compliance could void the user's authority to operate this equipment. The use of shielded cables for connection of the equipment and other peripherals is required to meet FCC requirements.

Canada

(English) Industry Canada Compliance Statement

Remark for the Matrox hardware products supported by this guide

These digital devices do not exceed the Class A limits for radio noise emission from digital devices set out in the Radio Interference Regulation of Industry Canada.

(Français) Conformité avec les exigences de l'Industrie Canada

Remarque sur les produits matériels Matrox couverts par ce guide

Ces appareils numériques n'émettent aucun bruit radioélectrique dépassant les limites applicables aux appareils numériques de Classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par Industrie Canada.

Europe

CE

(English) European user's information – Declaration of Conformity

CAN ICES-3 (A)/NMB-3 (A)

Remark for the Matrox hardware products supported by this guide

These devices comply with EC Directive 2006/95/EC for a Class A digital device. They have been tested and found to comply with EN55022/CISPR22 and EN55024/CISPR24. In a domestic environment these products may cause radio interference in which case the user may be required to take adequate measures.To meet EC requirements, shielded cables must be used to connect the equipment and other peripherals.

(Français) Informations aux utilisateurs Européens – Déclaration de conformité

CAN ICES-3 (A)/NMB-3 (A)

Remarque sur les produits matériels Matrox couverts par ce guide

Ces unités sont conformes à la directive communautaire 2006/95/EC pour les unités numériques de classe A. Les tests effectués ont prouvé qu'elles sont conformes aux normes EN55022/CISPR22 et EN55024/CISPR24. Le fonctionnement de ces produits dans un environnement résidentiel peut causer des interférences radio, dans ce cas l'utilisateur peut être amené à prendre les mesures appropriées. Pour respecter les impératifs communautaires, les câbles de connexion entre l'équipement et ses périphériques doivent être blindés.

(Deutsch) Information für europäische Anwender – Konformitätserklärung

Anmerkung für die Matrox Hardware-Produktunterstützung durch dieses Handbuch

Diese Geräte entsprechen EC Direktive 2006/95/EC für ein digitales Gerät Klasse A. Sie wurden getestet und entsprechen demnach EN55022/CISPR22 und EN55024/CISPR24. In einer Wohnumgebung können diese Produkte Funkinterferenzen erzeugen, und der Benutzer kann genötigt sein, entsprechende Maßnahmen zu ergreifen. Um EG-Anforderungen zu entsprechen, müssen zum Anschließen des ausrüstung und anderer Peripheriegeräte abgeschirmte Kabel verwendet werden.

(Italiano) Informazioni per gli utenti europei – Dichiarazione di conformità

Nota per i prodotti hardware Matrox supportati da questa guida

Questi dispositivi sono conformi alla direttiva CEE 2006/95/EC relativamente ai dispositivi digitali di Classe A. Sono stati provati e sono risultati conformi alle norme EN55022/CISPR22 e EN55024/CISPR24. In un ambiente domestico, questi prodotti possono causare radiointerferenze, nel qual caso all'utente potrebbe venire richiesto di prendere le misure adeguate. Per soddisfare i requisiti CEE, l'apparecchiatura e le altre periferiche vanno collegati con cavi schermati.

(Español) Información para usuarios europeos – Declaración de conformidad

Observación referente a los productos de hardware de Matrox apoyados por este manual

Estos dispositivos cumplen con la directiva de la CE 2006/95/EC para dispositivos digitales de Clase A. Dichos dispositivos han sido sometidos a prueba y se ha comprobado que cumplen con las normas EN55022/CISPR22 y EN55024/CISPR24. En entornos residenciales, estos productos pueden causar interferencias en las comunicaciones por radio; en tal caso el usuario deberá adoptar las medidas adecuadas. Para satisfacer las disposiciones de la CE, deberán utilizarse cables apantallados para conectar el equipo y demás periféricos.

www.matrox.com/video